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(71)出願人 000005267

プラザー工業株式会社

愛知県名古屋市長区瑞穂区苗代町15番1号

(72)発明者 青木 一磨

愛知県名古屋市長区瑞穂区苗代町15番1号 プ

ラザー工業株式会社内

(74)代理人 弁理士 石川 泰男 (外2名)

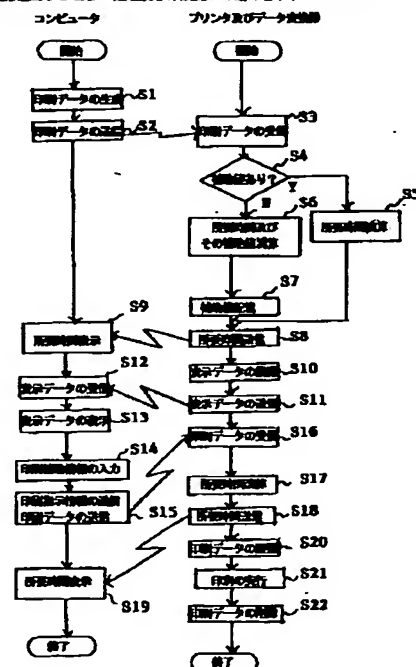
(54)【発明の名称】 印刷システム及び印刷方法並びに印刷制御プログラムが記録された記録媒体

(57)【要約】

【課題】 迅速に処理時間の推定演算を実行して、本来の印刷出力処理を迅速に実行することが可能な印刷システム等を提供する。

【解決手段】 印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出し(ステップS5、S6)、算出された処理時間を示す演算補助値等の時間情報を記憶する(ステップS7)。そして、実際の印刷時において、記憶されている時間情報を用いて実際の印刷処理に要する処理時間を算出し(ステップS17)と、算出された処理時間を告知する(ステップS19)。

第1実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



## 【特許請求の範囲】

【請求項1】 印刷すべき印刷データを印刷する印刷システムにおいて、

前記印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する算出手段と、

前記算出された処理時間を示す時間情報を記憶する記憶手段と、

実際の前記印刷時において、前記記憶されている時間情報を用いて実際の前記印刷処理に要する時間である実処理時間を生成する生成手段と、

前記生成された実処理時間を告知する告知手段と、  
を備えることを特徴とする印刷システム。

【請求項2】 請求項1に記載の印刷システムにおいて、

前記記憶手段は、前記処理時間自体を前記時間情報として記憶すると共に、

前記生成手段は、当該処理時間を前記記憶手段から読み出し、前記実処理時間として前記告知手段に出力することを特徴とする印刷システム。

【請求項3】 請求項1に記載の印刷システムにおいて、

前記記憶手段は、前記処理時間を構成する部分処理時間のうち、前記印刷データの印刷態様に依存して変化する前記部分処理時間である変化時間を示す変化時間情報と、前記印刷処理に対応した一定の前記部分処理時間である一定時間を示す一定時間情報とを記憶すると共に、  
前記生成手段は、前記記憶されている変化時間情報及び一定時間情報並びに実際の前記印刷時における前記印刷態様に基づいて前記実処理時間を生成することを特徴とする印刷システム。

【請求項4】 請求項1から3のいずれか一項に記載の印刷システムであって、

前記印刷処理は、前記印刷データの印刷態様を前記印刷前に表示するイメージ表示処理と、当該印刷データを仮に印刷する仮印刷処理とを含むと共に、

前記算出手段は、前記イメージ表示処理及び前記仮印刷処理のうち少なくとも一方を前記印刷前に実際に実行することにより前記処理時間を算出することを特徴とする印刷システム。

【請求項5】 請求項1から4のいずれか一項に記載の印刷システムであって、

前記印刷データを生成するデータ生成装置と、

前記生成された印刷データを前記印刷する際に用いられる変換印刷データに変換する変換装置と、

前記変換印刷データを印刷出力する印刷装置とを含み、

前記算出手段、前記記憶手段及び前記生成手段が前記変換装置内に含まれていると共に、

前記告知手段が前記データ生成装置に含まれていることを特徴とする印刷システム。

【請求項6】 印刷すべき印刷データを印刷する印刷シ

ステムにおける印刷方法であって、

前記印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する算出工程と、

前記算出された処理時間を示す時間情報を記憶する記憶工程と、

実際の前記印刷時において、前記記憶されている時間情報を用いて実際の前記印刷処理に要する時間である実処理時間を生成する生成工程と、

前記生成された実処理時間を告知する告知工程と、

10 を備えることを特徴とする印刷方法。

【請求項7】 請求項6に記載の印刷方法において、

前記記憶工程において、前記処理時間自体を前記時間情報として記憶すると共に、

前記生成工程において、当該処理時間を前記記憶手段から読み出し、前記実処理時間として前記告知手段に出力することを特徴とする印刷方法。

【請求項8】 請求項6に記載の印刷方法において、前記記憶工程において、前記処理時間を構成する部分処理時間のうち、前記印刷データの印刷態様に依存して変化する前記部分処理時間である変化時間を示す変化時間情報と、前記印刷処理に対応した一定の前記部分処理時間である一定時間を示す一定時間情報とを記憶すると共に、

前記生成工程において、前記記憶されている変化時間情報及び一定時間情報並びに実際の前記印刷時における前記印刷態様に基づいて前記実処理時間を生成することを特徴とする印刷方法。

【請求項9】 請求項6から8のいずれか一項に記載の印刷方法であって、

30 前記印刷処理は、前記印刷データの印刷態様を前記印刷前に表示するイメージ表示処理と、当該印刷データを仮に印刷する仮印刷処理とを含むと共に、

前記算出工程において、前記イメージ表示処理及び前記仮印刷処理のうち少なくとも一方を前記印刷前に実際に実行することにより前記処理時間を算出することを特徴とする印刷方法。

【請求項10】 請求項6から9のいずれか一項に記載の印刷方法であって、

前記印刷システムは、前記印刷データを生成するデータ生成装置と、前記生成された印刷データを前記印刷する際に用いられる変換印刷データに変換する変換装置と、前記変換印刷データを印刷出力する印刷装置とを含み、  
前記算出工程、前記記憶工程及び前記生成工程は前記変換装置において実行されると共に、

前記告知工程は、前記データ生成装置において実行されることを特徴とする印刷方法。

【請求項11】 印刷すべき印刷データを印刷する印刷システムに含まれるコンピュータを、

前記印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する算出手段、

前記算出された処理時間を示す時間情報を記憶手段に記憶させる記憶制御手段、

実際の前記印刷時において、前記記憶されている時間情報を用いて実際の前記印刷処理に要する時間である実処理時間を生成する生成手段、及び、

前記生成された実処理時間を告知する告知手段、

として機能させるための印刷制御プログラムが記録されたことを特徴とする記録媒体。

【請求項12】 請求項11に記載の印刷制御プログラムが記録された記録媒体において、

前記記憶制御手段として機能するコンピュータは、前記処理時間自体を前記時間情報として前記記憶手段に記憶させると共に、

前記生成手段として機能するコンピュータは、当該処理時間を前記記憶手段から読み出し、前記告知手段として機能するコンピュータに前記実処理時間として出力することを特徴とする印刷制御プログラムが記録された記録媒体。

【請求項13】 請求項11に記載の印刷制御プログラムが記録された記録媒体において、

前記記憶制御手段として機能するコンピュータは、前記処理時間を構成する部分処理時間のうち、前記印刷データの印刷態様に依存して変化する前記部分処理時間である変化時間を示す変化時間情報と、前記印刷処理に対応した一定の前記部分処理時間である一定時間を示す一定時間情報とを前記記憶手段に記憶させると共に、

前記生成手段として機能するコンピュータは、前記記憶されている変化時間情報及び一定時間情報並びに実際の前記印刷時における前記印刷態様に基づいて前記実処理時間を生成することを特徴とする印刷制御プログラムが記録された記録媒体。

【請求項14】 請求項11から13のいずれか一項に記載の印刷制御プログラムが記録された記録媒体において、

前記印刷処理は、前記印刷データの印刷態様を前記印刷前に表示するイメージ表示処理と、当該印刷データを仮に印刷する仮印刷処理とを含むと共に、

前記算出手段として機能するコンピュータは、前記イメージ表示処理及び前記仮印刷処理のうち少なくとも一方を前記印刷前に実際に実行することにより前記処理時間を算出することを特徴とする印刷制御プログラムが記録された記録媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、印刷データを印刷する印刷システムにおいて、印刷に要する処理時間を推定して実際の印刷前に使用者に告知する構成を備える印刷システムの技術分野に属する。

【0002】

【従来の技術】従来、文書又は画像等の印刷データを印

刷する際に、当該印刷に要する所要時間を推定演算して使用者に告知する処理が知られている。この告知処理は、例えば、複数のコンピュータで一台のプリンタを共用する場合、又は膨大な量の印刷データを印刷する際等において、予め印刷完了時刻を予測することができ、その間に使用者は他の業務等を実行することができる点で、非常に有用な処理である。

【0003】この処理時間を推定演算する方法として従来知られているものには、例えば、印刷データ（テキストデータ）の印刷処理時間を、文字数、特殊記号、下線の有無及び罫線の有無を考慮して算出する方法（特開昭64-38824号公報参照）、印刷データ内のコマンドを分析し、更に分析した各コマンドに対応した処理時間が記述されているテーブルを参照してその値の合計値を算出する方法（特開平2-57367号公報又は特開平4-146165号公報参照）、又は印刷データを解析し、その中に含まれる頁数に比例した処理時間を求める方法（特開平3-164927号公報参照）等がある。

20 【0004】

【発明が解決しようとする課題】しかしながら、上記各方法を含む従来の方法においては、印刷データの実際の印刷時毎に、その所要時間を、印刷開始が指示されてから印刷結果が得られるまでに実行される全ての処理の処理時間を夫々実際に算出してそれらを合計することにより算出することが一般的である。

【0005】従って、印刷データが膨大な量であったり、複雑な処理が必要な印刷データである場合には、当該所要時間の推定演算処理自体に時間がかかり、本来の印刷処理がなかなか開始できない場合があり、結果的に最終的な印刷結果を得るのが遅れてしまうという問題点があった。

【0006】この問題点については、例えば、印刷結果の概要を画面表示等で確認するプレビュー処理や印刷データの仮印刷（試し印刷）を行った後に改めて本来の印刷出力を実行しようとする場合でも、当該本来の印刷出力処理において同様に推定演算を実行するので、同様の問題点が存在することとなる。

40 【0007】そこで、本発明は、上記の各問題点に鑑みてなされたもので、その課題は、迅速に処理時間の推定演算を実行して、本来の印刷出力処理を迅速に実行することが可能な印刷システム及び印刷方法並びに印刷制御プログラムを記録した記録媒体を提供することにある。

【0008】

【課題を解決するための手段】上記の課題を解決するために、請求項1に記載の発明は、印刷すべき印刷データを印刷する印刷システムにおいて、前記印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出するCPU等の算出手段と、前記算出された処理時間を示す時間情報を記憶するRAM等の記憶手段と、実際の前

記印刷時において、前記記憶されている時間情報を用いて実際の前記印刷処理に要する時間である実処理時間を生成するCPU等の生成手段と、前記生成された実処理時間を告知するCPU等の告知手段と、を備える。

【0009】請求項1に記載の発明の作用によれば、算出手段は、印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する。

【0010】そして、記憶手段は、算出された処理時間を示す時間情報を記憶する。

【0011】その後、生成手段は、実際の印刷時において、記憶されている時間情報を用いて実処理時間を生成する。

【0012】最後に、告知手段は、生成された実処理時間を告知する。

【0013】よって、実際の印刷時において、印刷に必要な実処理時間を迅速に認識することができる。

【0014】上記の課題を解決するために、請求項2に記載の発明は、請求項1に記載の印刷システムにおいて、前記記憶手段は、前記処理時間自体を前記時間情報として記憶すると共に、前記生成手段は、当該処理時間を前記記憶手段から読み出し、前記実処理時間として前記告知手段に出力するように構成される。

【0015】請求項2に記載の発明の作用によれば、請求項1に記載の発明の作用に加えて、記憶手段は、処理時間自体を時間情報として記憶する。

【0016】そして、生成手段は、当該処理時間を記憶手段から読み出し、実処理時間として告知手段に出力する。

【0017】よって、処理時間そのものを記憶しておくので、実際の印刷時において、より迅速に実処理時間を認識することができる。

【0018】上記の課題を解決するために、請求項3に記載の発明は、請求項1に記載の印刷システムにおいて、前記記憶手段は、前記処理時間を構成する部分処理時間のうち、前記印刷データの印刷態様に依存して変化する前記部分処理時間である変化時間を示す変化時間情報と、前記印刷処理に対応した一定の前記部分処理時間である一定時間を示す一定時間情報とを記憶すると共に、前記生成手段は、前記記憶されている変化時間情報及び一定時間情報並びに実際の前記印刷時における前記印刷態様に基づいて前記実処理時間を生成するように構成される。

【0019】請求項3に記載の発明の作用によれば、請求項1に記載の発明の作用に加えて、記憶手段は、変化時間情報と一定時間情報とを記憶すると共に、生成手段は、記憶されている変化時間情報及び一定時間情報並びに実際の印刷時における印刷態様に基づいて実処理時間を生成する。

【0020】よって、事前の処理時間算出時と印刷態様が異なる場合でも、実際の印刷時において迅速に実処理

時間を認識することができる。

【0021】上記の課題を解決するために、請求項4に記載の発明は、請求項1から3のいずれか一項に記載の印刷システムであって、前記印刷処理は、前記印刷データの印刷態様を前記印刷前に表示するイメージ表示処理と、当該印刷データを仮に印刷する仮印刷処理とを含むと共に、前記算出手段は、前記イメージ表示処理及び前記仮印刷処理のうち少なくとも一方を前記印刷前に実際に実行することにより前記処理時間を算出するように構成される。

【0022】請求項4に記載の発明の作用によれば、請求項1から3のいずれか一項に記載の発明の作用に加えて、印刷処理はイメージ表示処理と仮印刷処理とを含むと共に、算出手段はイメージ表示処理及び仮印刷処理のうち少なくとも一方を印刷前に実際に実行することにより処理時間を算出する。

【0023】よって、実測により算出された処理時間を示す時間情報に基づいて処理時間が生成されるので、より正確に実処理時間を生成することができる。

【0024】上記の課題を解決するために、請求項5に記載の発明は、請求項1から4のいずれか一項に記載の印刷システムであって、前記印刷データを生成するコンピュータ等のデータ生成装置と、前記生成された印刷データを前記印刷する際に用いられる変換印刷データに変換するデータ変換器等の変換装置と、前記変換印刷データを印刷出力するプリンタ等の印刷装置とを含み、前記算出手段、前記記憶手段及び前記生成手段が前記変換装置内に含まれていると共に、前記告知手段が前記データ生成装置に含まれているように構成される。

【0025】請求項5に記載の発明の作用によれば、請求項1から4のいずれか一項に記載の発明の作用に加えて、データ生成装置は印刷データを生成する。

【0026】そして、変換装置は、生成された印刷データを変換印刷データに変換する。

【0027】更に、印刷装置は変換印刷データを印刷出力する。

【0028】このとき、算出手段、記憶手段及び生成手段が変換装置内に含まれていると共に、告知手段がデータ生成装置に含まれている。

【0029】よって、複数のデータ生成装置により変換装置及び印刷装置を共用する印刷システムであっても、実際の印刷時にデータ生成装置において実処理時間を迅速に認識することができる。

【0030】上記の課題を解決するために、請求項6に記載の発明は、印刷すべき印刷データを印刷する印刷システムにおける印刷方法であって、前記印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する算出工程と、前記算出された処理時間を示す時間情報を記憶する記憶工程と、実際の前記印刷時において、前記記憶されている時間情報を用いて実際の前記印刷処理

に要する時間である実処理時間を生成する生成工程と、前記生成された実処理時間を告知する告知工程と、を備える。

【0031】請求項6に記載の発明の作用によれば、算出工程において、印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する。

【0032】そして、記憶工程において、算出された処理時間を示す時間情報を記憶する。

【0033】その後、生成工程において、実際の印刷時において、記憶されている時間情報を用いて実処理時間を生成する。

【0034】最後に、告知工程において、生成された実処理時間を告知する。

【0035】よって、実際の印刷時において、印刷処理に必要な実処理時間を迅速に認識することができる。

【0036】上記の課題を解決するために、請求項7に記載の発明は、請求項6に記載の印刷方法において、前記記憶工程において、前記処理時間自体を前記時間情報として記憶すると共に、前記生成工程において、当該処理時間を前記記憶手段から読み出し、前記実処理時間として前記告知手段に出力するように構成される。

【0037】請求項7に記載の発明の作用によれば、請求項6に記載の発明の作用に加えて、記憶工程において、処理時間自体を時間情報として記憶する。

【0038】そして、生成工程において、当該処理時間を記憶手段から読み出し、実処理時間として告知手段に出力する。

【0039】よって、処理時間そのものを記憶しておくので、実際の印刷時において、より迅速に実処理時間を認識することができる。

【0040】上記の課題を解決するために、請求項8に記載の発明は、請求項6に記載の印刷方法において、前記記憶工程において、前記処理時間を構成する部分処理時間のうち、前記印刷データの印刷態様に依存して変化する前記部分処理時間である変化時間を示す変化時間情報と、前記印刷処理に対応した一定の前記部分処理時間である一定時間を示す一定時間情報とを記憶すると共に、前記生成工程において、前記記憶されている変化時間情報及び一定時間情報並びに実際の前記印刷時における前記印刷態様に基づいて前記実処理時間を生成するように構成される。

【0041】請求項8に記載の発明の作用によれば、請求項6に記載の発明の作用に加えて、記憶工程において、変化時間情報と一定時間情報とを記憶すると共に、生成工程において、記憶されている変化時間情報及び一定時間情報並びに実際の印刷時における印刷態様に基づいて実処理時間を生成する。

【0042】よって、事前の処理時間算出時と印刷態様が異なる場合でも、実際の印刷時において迅速に実処理時間を認識することができる。

【0043】上記の課題を解決するために、請求項9に記載の発明は、請求項6から8のいずれか一項に記載の印刷方法であって、前記印刷処理は、前記印刷データの印刷態様を前記印刷前に表示するイメージ表示処理と、当該印刷データを仮に印刷する仮印刷処理とを含むと共に、前記算出工程において、前記イメージ表示処理及び前記仮印刷処理のうち少なくとも一方を前記印刷前に実際に実行することにより前記処理時間を算出するように構成される。

【0044】請求項9に記載の発明の作用によれば、請求項6から8のいずれか一項に記載の発明の作用に加えて、印刷処理はイメージ表示処理と仮印刷処理とを含むと共に、算出工程においてイメージ表示処理及び仮印刷処理のうち少なくとも一方を印刷前に実際に実行することにより処理時間を算出する。

【0045】よって、実測により算出された処理時間を示す時間情報に基づいて処理時間が生成されるので、より正確に実処理時間を生成することができる。

【0046】上記の課題を解決するために、請求項10に記載の発明は、請求項6から9のいずれか一項に記載の印刷方法であって、前記印刷システムは、前記印刷データを生成するデータ生成装置と、前記生成された印刷データを前記印刷する際に用いられる変換印刷データに変換する変換装置と、前記変換印刷データを印刷出力する印刷装置とを含み、前記算出工程、前記記憶工程及び前記生成工程は前記変換装置において実行されると共に、前記告知工程は、前記データ生成装置において実行されるように構成される。

【0047】請求項10に記載の発明の作用によれば、請求項6から9のいずれか一項に記載の発明の作用に加えて、データ生成装置において印刷データの生成が行われ、変換装置において生成された印刷データが変換印刷データに変換される。そして、印刷装置において変換印刷データが印刷出力される。

【0048】このとき、算出工程、記憶工程及び生成工程が変換装置において実行されると共に、告知工程がデータ生成装置において実行される。

【0049】よって、複数のデータ生成装置により変換装置及び印刷装置を共用する印刷システムにおいても、実際の印刷時にデータ生成装置において実処理時間を迅速に認識することができる。

【0050】上記の課題を解決するために、請求項11に記載の発明は、印刷すべき印刷データを印刷する印刷システムに含まれるコンピュータを、前記印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する算出手段、前記算出された処理時間を示す時間情報を記憶手段に記憶させる記憶制御手段、実際の前記印刷時において、前記記憶されている時間情報を用いて実際の前記印刷処理に要する時間である実処理時間を生成する生成手段、及び、前記生成された実処理時間を告知す

る告知手段、として機能させるための印刷制御プログラムが記録されて構成される。

【0051】請求項11に記載の発明の作用によれば、算出手段として機能するコンピュータは、印刷データを印刷処理する際に必要な処理時間を実際の印刷前に算出する。

【0052】そして、記憶制御手段として機能するコンピュータは、算出された処理時間を示す時間情報を記憶手段に記憶させる。

【0053】その後、生成手段として機能するコンピュータは、実際の印刷時において、記憶されている時間情報を用いて実処理時間を生成する。

【0054】最後に、告知手段として機能するコンピュータは、生成された実処理時間を告知する。

【0055】よって、実際の印刷時において、印刷処理に必要な実処理時間を迅速に認識することができる。

【0056】上記の課題を解決するために、請求項12に記載の発明は、請求項11に記載の印刷制御プログラムが記録された記録媒体において、前記記憶制御手段として機能するコンピュータは、前記処理時間自体を前記時間情報として前記記憶手段に記憶させると共に、前記生成手段として機能するコンピュータは、当該処理時間を前記記憶手段から読み出し、前記告知手段として機能するコンピュータに前記実処理時間として出力するように構成される。

【0057】請求項12に記載の発明の作用によれば、請求項11に記載の発明の作用に加えて、記憶制御手段として機能するコンピュータは、処理時間自体を時間情報として記憶手段に記憶させる。

【0058】そして、生成手段として機能するコンピュータは、当該処理時間を記憶手段から読み出し、告知手段として機能するコンピュータに実処理時間として出力する。

【0059】よって、処理時間そのものを記憶しておくので、実際の印刷時において、より迅速に実処理時間を認識することができる。

【0060】上記の課題を解決するために、請求項13に記載の発明は、請求項11に記載の印刷制御プログラムが記録された記録媒体において、前記記憶制御手段として機能するコンピュータは、前記処理時間を構成する部分処理時間のうち、前記印刷データの印刷態様に依存して変化する前記部分処理時間である変化時間を示す変化時間情報と、前記印刷処理に対応した一定の前記部分処理時間である一定時間を示す一定時間情報とを前記記憶手段に記憶させると共に、前記生成手段として機能するコンピュータは、前記記憶されている変化時間情報及び一定時間情報並びに実際の前記印刷時における前記印刷態様に基づいて前記実処理時間を生成するように構成される。

【0061】請求項13に記載の発明の作用によれば、

請求項11に記載の発明の作用に加えて、記憶制御手段として機能するコンピュータは、変化時間情報と一定時間情報とを記憶すると共に、生成手段として機能するコンピュータは、記憶されている変化時間情報及び一定時間情報並びに実際の印刷時における印刷態様に基づいて実処理時間を生成する。

【0062】よって、事前の処理時間算出時と印刷態様が異なる場合でも、実際の印刷時において迅速に実処理時間を認識することができる。

10 【0063】上記の課題を解決するために、請求項14に記載の発明は、請求項11から13のいずれか一項に記載の印刷制御プログラムが記録された記録媒体において、前記印刷処理は、前記印刷データの印刷態様を前記印刷前に表示するイメージ表示処理と、当該印刷データを仮に印刷する仮印刷処理とを含むと共に、前記算出手段として機能するコンピュータは、前記イメージ表示処理及び前記仮印刷処理のうち少なくとも一方を前記印刷前に実際に実行することにより前記処理時間を算出するように構成される。

20 【0064】請求項14に記載の発明の作用によれば、請求項11から13のいずれか一項に記載の発明の作用に加えて、印刷処理はイメージ表示処理と仮印刷処理とを含むと共に、算出手段として機能するコンピュータは、イメージ表示処理及び仮印刷処理のうち少なくとも一方を印刷前に実際に実行することにより処理時間を算出する。

【0065】よって、実測により算出された処理時間を示す時間情報に基づいて処理時間が生成されるので、より正確に実処理時間を生成することができる。

30 【0066】  
【発明の実施の形態】次に、本発明に好適な実施の形態について図面に基づいて説明する。なお、以下に説明する実施の形態は、データ生成装置としての複数のコンピュータが、変換装置としての一のデータ変換器（より具体的には、例えば、データサーバ等）を介して出力装置としてのプリンタに接続されたネットワークシステムにおいて、夫々のコンピュータにより当該プリンタを共同使用する場合の出力制御に対して本発明を適用した場合の実施の形態である。

40 【0067】(I)全体構成  
始めに、実施形態のネットワークシステムの構成について、図1を用いて説明する。

【0068】図1に示すように、実施形態のネットワークシステムWは、4台のコンピュータ1乃至4と、データ変換器6と、夫々のコンピュータ1乃至4とデータ変換器6を接続する切替器5と、プリンタ7とにより構成されている。

【0069】この構成において、各コンピュータ1乃至4は、夫々が備えるアプリケーションソフトウェア等を用いてプリンタ7において印刷出力すべき印刷データを



生成して切換器5に出力する。ここで、上記出力データとしては、例えば、Adobe社の「ポストスクリプト」等の周知のページ記述言語により作成される。更に、これと並行して各コンピュータ1乃至4は後述のプレビュー処理を行う。

【0070】ここで、プレビュー処理とは、上記印刷データを用いたプリンタ7における印刷出力の前に、各コンピュータ1乃至4に含まれるか、又は当該コンピュータとは別に設けられた後述のディスプレイに対して、上記印刷データに対応して印刷出力される印刷出力データ（いわゆるビットマップデータ）の態様（すなわち、字体、文字の大きさ、全体のレイアウト、色配置等の態様）を表示する処理をいう。

【0071】切換器5は、夫々のコンピュータ1乃至4からの印刷データを一時的に記憶するバッファ部を備え、これらの印刷データをコンピュータ毎に時分割的にデータ変換器6に出力する。

【0072】さらに、切換器5は、データ変換器6から出力されてくる後述の表示データ等を各コンピュータに配信する。

【0073】一方、データ変換器6は、各コンピュータ1乃至4から切換器5を介して送信されてくる印刷データを、当該データ変換器6が保有する変換データを用いてプリンタ7において印刷出力するための印刷出力データ（以下、印刷ビットマップデータと称する。）に展開し、プリンタ7に出力する。更に、データ変換器6は後述のプレビュー処理及び印刷処理を行う。

【0074】そして、プリンタ7は、出力された印刷ビットマップデータに基づき、対応する印刷出力を行う。

【0075】(II) 細部構成

次に、上記ネットワークシステムWを構成する各構成部材の細部構成を図2及び図3を用いて説明する。

【0076】始めに、コンピュータ1乃至4の構成及び動作について、図2(a)を用いて説明する。なお、各コンピュータ1乃至4は、夫々同様の構成及び動作を実行するので、以下の説明では、代表してコンピュータ1について説明する。

【0077】図2(a)に示すように、コンピュータ1は、ROM13に記憶されたプログラムを読み出してそれに含まれている各命令を実行することにより後述のプレビュー処理を実行する告知手段としてのCPU10と、キーボード、マウス等よりなる入力部11と、ネットワーク接続部12と、記録媒体としてのROM(Read Only Memory)13と、RAM(Random Access Memory)14と、CRT(Cathode Ray Tube)又は液晶等よりなる告知手段としてのディスプレイ15と、コンピュータ1内の各構成部材を接続するバス16とにより構成されている。

【0078】上記の構成において、ネットワーク接続部12は、切換器5に接続されており、コンピュータ1か

ら出力するデータ及びコンピュータ1に入力するデータに対していわゆるインターフェース動作を行う。

【0079】一方、入力部11は、コンピュータ1における処理に必要なデータが入力されたときそれをバス16を介してCPU10等に出力する。

【0080】ROM13は、コンピュータ1全体の制御用のプログラム（後述のプレビュー処理用のフローチャートに対応するプログラムを含む。）を記憶している読み出し専用のメモリであり、所定のタイミングで必要なプログラムを読み出して、バス16に出力する。

【0081】また、RAM14は、実際には、ハードディスク装置等の記憶装置等により構成され、CPU10における処理に必要なデータ等を一時的に記憶し、必要に応じてバス16に出力する。

【0082】更に、ディスプレイ15は、CPU10における処理に必要な表示を行うと共に、後述の表示データSaに対応する画像を表示し、更に後述の処理時間を表示する。

【0083】最後に、CPU10は、RAM14に記憶されているアプリケーションプログラムを用いて対応する文書作成、画像処理等の処理を行って印刷データSbを生成すると共に、コンピュータ1を構成する各構成部材を制御する。

【0084】なお、本発明に係るプレビュー処理におけるコンピュータ1の動作については後ほど纏めて説明する。

【0085】次に、プリンタ7の構成及び動作について、図2(b)を用いて説明する。

【0086】図2(b)に示すように、プリンタ7は、CPU17と、ネットワーク接続部18と、ROM19と、RAM20と、出力エンジン21と、バス21aとにより構成されている。

【0087】この構成において、ネットワーク接続部18は、データ変換器6に接続されており、プリンタ7に入力される当該プリンタ7において印刷出力すべき印刷ビットマップデータ（ビットマップ形式のデータ）に対してインターフェース動作を行う。

【0088】一方、CPU17は、プリンタ7を構成する各構成部材を制御し、当該印刷ビットマップデータの印刷出力を行う。

【0089】また、ROM19は、プリンタ7全体の制御用のプログラムを記憶しているメモリであり、所定のタイミングで必要なプログラムを読み出して、バス21aに出力する。

【0090】更に、RAM20は、CPU17における処理に必要なデータ等を一時的に記憶し、必要に応じてバス21に出力する。

【0091】最後に、出力エンジン21は、インクジェット方式又は電子写真方式等の印刷部を備えており、CPU16の制御の下、実際の印刷ビットマップデータの

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印刷出力処理を行う。

【0092】なお、本発明に係るプレビュー処理及び印刷処理におけるプリンタ7の動作については後ほど纏めて説明する。

【0093】最後に、データ変換器6の構成及び動作について、図3を用いて説明する。

【0094】図3に示すように、データ変換器6は、インターフェース22a及び22bと、ROM36に記憶されているプログラムを読み出してそれに含まれる各命令を実行し後述のプレビュー処理及び印刷処理を行う算出手段及び生成手段としてのCPU23と、記録媒体としてのROM36と、記憶手段としてのRAM24と、ビットマップデータ生成部25と、表示データ生成部26と、バス27と、変換データROM35とにより構成されている。

【0095】更に、ビットマップデータ生成部25はCPU25a、ROM25b、RAM25cからなる論理演算回路を内蔵しており、表示データ生成部26はCPU26a、ROM26b及びRAM26cからなる論理演算回路を内蔵している。ここで、ROM25bは印刷ビットマップデータ生成のためのプログラムを記憶しており、ROM26bはCPU26aが表示データ生成部26を制御する際に必要なプログラムを記憶している。

【0096】この構成において、インターフェース22aは、切替器5を介した各コンピュータ1乃至4からのデータに対してインターフェース動作を行い、バス27に出力する。

【0097】そして、CPU23は、データ変換器6全体を制御すると共に、各コンピュータ1乃至4から送信されてくる後述の要求信号Srに基づいて、生成された後述の印刷ビットマップデータのプリンタ7への出力及び生成された後述の表示データSaの切替器5を介しての各コンピュータ1乃至4への出力を行う。

【0098】更に、CPU23は、後述のフローチャートに従った処理により、後述の所要時間を算出してコンピュータ1乃至4に送信する。

【0099】次に、RAM24は、データ変換器6に入力されてきた各コンピュータ1乃至4からの印刷データSb等を一時的に記憶し、必要に応じてバス27に出力する。これと並行してRAM24は、後述のビットマップデータ生成部25において生成された印刷ビットマップデータを一時的に記憶し、CPU23の制御の下、バス27を介してプリンタ7に出力すると共に、後述の表示データ生成部26において生成された表示データSaを一時的に記憶し、CPU23の制御の下、バス27を介してプリンタ7にコンピュータ1乃至4に出力する。

【0100】ROM36は、データ変換器6全体の制御用のプログラム（後述のプレビュー処理及び印刷処理用のフローチャートに対応するプログラムを含む。）を記憶している読み出し専用のメモリであり、所定のタイミ

ングで必要なプログラムを読み出して、バス27に出力する。

【0101】次に、変換データROM35は、コンピュータ1から入力された印刷データSb（ページ記述言語で作成されたページ記述データ）を印刷ビットマップデータに変換するための変換データを記憶しているROMであり、当該変換データは、ビットマップデータ生成部25と表示データ生成部26において共用される。そして、具体的な変換データとしては、印刷データSb（ページ記述言語）内の個々の指令コードを解釈して図形等の描画を行うための変換規則データ35bと印刷データSbに含まれるいわゆるキャラクタコードに対応するフォント（字体）データ（アウトラインデータ）30aとを含み、これらが必要に応じて読み出される。

【0102】一方、ビットマップデータ生成部25は、各コンピュータ1乃至4からの印刷データSbをプリンタ7において印刷出力するための印刷ビットマップデータに展開加工し、RAM23に出力する。すなわち、印刷データSb内の指令コードや上記キャラクタコードを読み出し、更に夫々に対応する変換規則データ35b又はフォントデータ35aを変換データROM35から読み出して、RAM23内のページメモリ内に、指令コードに対応する図形やキャラクタコードに対応するフォントをビットマップ形式で記憶させる。

【0103】なお、ビットマップデータ生成部25における展開加工においては、実際にプリンタ7において印刷出力に使用されるフォント等を含む上記変換データを用いて実際に印刷出力する頁毎に印刷ビットマップデータが生成される。

【0104】そして、インターフェース22bは、生成された印刷ビットマップデータ等の、プリンタ7における印刷処理に必要なデータに対してインターフェース処理を行い、プリンタ7に出力する。

【0105】最後に、表示データ生成部26は、各コンピュータ1乃至4から送信されてくる要求信号Srに対応して、上記印刷データSb（各コンピュータ1乃至4から送信されてくる印刷データSb）並びに上記変換データを用いて後述のプレビュー処理用の（すなわち、印刷ビットマップデータに対応するものとしてディスプレイ15において表示するための）表示データSaを生成する。すなわち、ビットマップデータ生成部25における印刷ビットマップデータの生成と同様の処理によりビットマップ形式の表示データSaを生成する。このとき、変換データROM35からの変換データをビットマップデータ生成部25と共有することとなるので、プリンタ7における実際の印刷出力に忠実な表示データSaを生成できることとなる。

【0106】なお、本発明に係るプレビュー処理及び印刷処理におけるデータ変換器6の動作については以下に纏めて説明する。



### 【0107】(III) プレビュー処理及び印刷処理の第1実施形態

次に、ネットワークシステムWにおいて実行されるプレビュー処理及び印刷処理の第1実施形態について、図4に示すフローチャートを用いて説明する。本実施形態のプレビュー処理及び印刷処理においては、プリンタ7において印刷出力すべき印刷データSb（ページ記述データ）に忠実な表示データSaが生成されてディスプレイ15に表示されると共に、印刷データSbを印刷処理する際の所要時間がCPU23により算出されてコンピュ

ータ1乃至4に伝送される。  
【0108】また、以下の説明においては、理解の容易のために、コンピュータ1とデータ変換器6並びにプリンタ7を用いたプレビュー処理及び印刷処理について説明すると共に、コンピュータ1の処理とデータ変換器6及びプリンタ7の処理とを並行して説明する。

【0109】更に以下に説明する実施形態は、印刷データSbが入力されてこれを印刷処理開始まで保存しない構成のデータ変換器6を用いた場合の実施形態である。

【0110】図4に示すように、実施形態のプレビュー処理及び印刷処理においては、始めに、コンピュータ1において、プリンタ7を用いて印刷出力すべき印刷データSb（例えば、印刷出力すべき文書又は画像等）が生成される（ステップS1）。

【0111】そして、プレビュー処理の要求信号Srと共に、当該生成された印刷データSbが切替器5を介してデータ変換器6に対して送信され（ステップS2）、当該データ変換器6において受信される（ステップS3）。

【0112】次に、受信した印刷データSbを印刷処理する際の所要時間を演算するために用いられる演算補助値がRAM24に記憶されているか否かを判定する（ステップS4）。そして、当該演算補助値が記憶されているときは（ステップS4；yes）当該演算補助値を用いて所要時間を推定演算する（ステップS5）。

【0113】ここで、上記所要時間について説明すると、当該所要時間としては、ビットマップデータ生成部25における印刷ビットマップデータの生成開始から、それを印刷し終わるまでの時間（後述のプレビュー処理が実行されるときは、当該プレビュー処理のための時間も含まれる。）とするのが望ましい。このため、ステップS5による所要時間の算出においては、印刷ビットマップデータの生成に要する時間は、印刷データの内容を解析して算出を行うと共に、印刷ビットマップデータの生成完了から印刷終了までの時間は、印刷ビットマップデータのプリンタ7への伝送までに必要な所要時間の概算値に、印刷サイズに対応した予め実験等により算出されている所定の印刷サイズに比例した時間を加算することで算出する。

【0114】また、印刷ビットマップデータの生成に要する時間は、後述するステップS10におけるプレビュー処理用の表示データを生成する際の実測値に基づいたものでもよい。この場合、より迅速に所要時間を求めることができる。

【0115】なお、この他に、所要時間として、例えば、ビットマップデータ生成部25における印刷ビットマップデータの生成開始から生成終了までの時間としてもよいし、また、ビットマップデータ生成部25における印刷ビットマップデータの生成開始からその印刷ビットマップデータのプリンタ7への転送完了までの時間、又は他の記憶装置等への転送までの時間としてもよい。

【0116】また、所要時間の始期を、対象となる印刷データに対応する印刷ビットマップデータ生成開始からではなく、当該印刷データがデータ変換器6に送られた時間からとしてもよい。その場合、所要時間は、当該印刷データよりも先に処理すべき業務（例えば、既にデータ変換器6に蓄積されていた先に処理されるべき印刷データの処理）に要する時間を上述の所要時間に加算することで算出できる。

【0117】次に、上記演算補助値について説明すると、当該演算補助値は、同じ印刷データSbがデータ変換器6に入力された場合（例えば、本実施形態のように、プレビュー処理のために表示データSaとして展開する印刷データSbと同一の印刷データSbについて印刷処理を行う場合等）、2回目以降の上記所要時間の演算の際に使用される補助値であり、一つの印刷データSbについて一度算出されると、後述のようにRAM24内に記憶されているものである。

【0118】そして、当該演算補助値の具体的な値としては、上記演算された所要時間そのものを当該印刷データSbに対応する演算補助値として記憶しておいてもよいし、また、印刷処理に必要な時間のうち、印刷サイズ（拡大率又は縮小率）に比例して変化する時間を単位サイズ（すなわち、印刷データSbに対して拡大率1.0で印刷する場合）を印刷する際の時間で除した値（以下、単に「a」とする。）と、印刷サイズに依らず一定の時間（以下、単に「b」とする。）とに分けて記憶しておいてもよい。後者の場合には、実際に要する所要時間は、

所要時間＝a×（印刷サイズ）＋b  
として算出できる。

【0119】ここで、上記印刷サイズに比例して変化する時間としては、例えば、ベクトルデータからビットマップデータへの変換に要する時間やビットマップデータの転送のための時間、或は印刷ビットマップデータをプリンタ7に伝送するための時間等がある。

【0120】更に、印刷サイズに依らず一定の時間としては、印刷データSbの構文解析のための時間や、ベクトルデータの座標変換のための時間等がある。

【0121】上述に説明した方法により所要時間が演算されると(ステップS5)、次に、当該所要時間に対応する所要時間情報をコンピュータ1に返信し(ステップS8)、コンピュータ1においてこれを受信して当該所要時間をディスプレイ15に表示等し、使用者に告知する(ステップS9)。

【0122】一方、ステップS4の判定において、演算補助値が記憶されていないとき、すなわち、受信した印刷データSbがそれまでプレビュー処理又は印刷処理されることがない印刷データSbであるときは(ステップS4;no)、次に、当該印刷データSbに基づいて、CPU23により上記所要時間を推定演算すると共に上記演算補助値を算出する(ステップS6)。そして、当該算出した演算補助値を対応する印刷データSbを識別するための情報と共にRAM24に記憶する(ステップS7)。

【0123】なお、演算補助値を記憶するRAM24内の領域は、例えば電池等によりバックアップするか、又は不揮発性化することにより、データ変換器6の電源を断としても記憶している演算補助値が消失ないように構成されている。

【0124】演算補助値の記憶が終了すると、上記ステップS8及びS9に移行する。

【0125】次に、データ変換器6において、CPU23の制御の下、表示データ生成部26が、RAM24に記憶されている印刷データSbと、上記フォントデータ35a及び変換規則データ35b等を含む変換データとを用いてディスプレイ15上に表示すべき表示データSaを生成(展開)する(ステップS10)。このとき、生成された表示データSaは、印刷データSbを実際に印刷出力するときの態様(字体、文字の大きさ、全体のレイアウト、色配置等の態様)とほぼ同じ態様のビットマップ形式のデータである。

【0126】そして、生成された表示データSaをコンピュータ1に送信する(ステップS11)。

【0127】次に、当該表示データSaがコンピュータ1において受信されると(ステップS12)、当該表示データSaに対応する画像、すなわち、印刷データSbをプリンタ7において印刷出力するときの態様にほぼ一致した画像(表示データSaに対応した画像)がディスプレイ15に表示され、使用者がこれを確認する(ステップS13)。

【0128】そして、実際に印刷を実行する際の補助情報(例えば、印刷する際の上記印刷サイズ)の入力がコンピュータ1において実行されると(ステップS14)、次に、コンピュータ1から実際に印刷出力を開始するか否かを示す要求信号Srとして指示データ(指示コマンド)が印刷データSbと共に送信される(ステップS15)。

【0129】次に、当該指示データ及び印刷データSb

がデータ変換器6において受信されると(ステップS16)、受信した印刷データSbに対応する上記所要時間を演算補助値を用いて演算し(ステップS17)対応する所要時間をコンピュータ1に送信する(ステップS18)。そして、コンピュータ1においては送信された所要時間情報に対応する所要時間を表示して使用者に告知する(ステップS19)。

【0130】更に、データ変換器6においては、上記ステップS19と並行して、RAM23に記憶されている印刷データSbをビットマップデータ生成部25により印刷ビットマップデータに展開して(ステップS20)プリンタ7に出力し、プリンタ7において出力エンジン20を用いて印刷を実行する(ステップS21)。

【0131】そして、印刷出力が終了したらRAM23に記憶されている印刷データSbを削除して(ステップS22)処理を終了する。

【0132】以上説明した実施形態のプレビュー処理及び印刷処理によれば、印刷処理する際に必要な処理時間を実際の印刷前のプレビュー処理時に算出し、当該算出された処理時間を示す演算補助値を記憶すると共に、実際の印刷時において、記憶されている演算補助値を用いて処理時間を生成して告知するので、実際の印刷時において、印刷処理に必要な処理時間を迅速に認識することができる。

【0133】また、処理時間自体を演算補助値として記憶する場合は、実際の印刷時において、より迅速に処理時間を認識することができる。

【0134】更に、所要時間を印刷サイズに対応して変化する時間に対応した情報と印刷サイズに拘らず一定な時間に対応した情報とに分けて記憶する場合には、事前の処理時間算出時と実際の印刷サイズとが異なる場合でも、実際の印刷時において迅速に処理時間を認識することができる。

【0135】更にまた、プレビュー処理を印刷前に実際に実行することにより処理時間を算出するので、実測により算出された処理時間を示す演算補助値に基づいて実際の印刷時における処理時間が生成されることとなり、より正確に処理時間を算出することができる。

【0136】なお、上記ステップS19において表示する情報は、上述した所要時間そのものの他に、印刷処理終了までの残り時間に変換して表示してもよいし、予定終了時刻を算出して表示してもよい。更に、所要時間全体に対する経過時間の割合を算出して表示してもよい。更に、これらの表示する情報への変換は、上記ステップS18でもステップS19においても可能である。

【0137】また、ステップS3及びステップS16においては、受信した印刷データSbが先に受信した印刷データSbと同一の印刷データか否かを判定する必要がある(記憶している演算補助値を用いて所要時間を算出することができるのか否かを決定するためである。)

この判定の方法としては、例えば、ステップS2でコンピュータ1において印刷データSbに対して識別番号を付して送信すると共に、ステップS15或は2回目以降のステップS2の送信において同じ識別番号を付して送信することによりデータ変換器6において判定することができる。

【0138】更に、他の判定の方法としては、データ変換器6がプレビュー処理時に印刷データSbを受信したときに（ステップS3参照）当該受信した印刷データSbに対して識別番号を付与し、これをコンピュータ1に返信すると共に、ステップS15或は2回目以降のステップS2において印刷データSbをコンピュータ1から送信する際、データ変換器6から送信されてきた上記識別番号を付して送信することによりデータ変換器6において判定することができる。

【0139】更に他の方法としては、ステップS3において印刷データSbを受信した際に、当該受信した印刷データSbのデータ量と、当該データを一定桁数の数値の羅列としてとらえ、それらの数値を全て加算した値に基づいて得られる値（いわゆる、チェックサム）を記憶し、ステップS16において再度印刷データSbを受信した際に、当該受信した印刷データSbのデータ量及び上記チェックサムと、記憶しておいたデータ量及びチェックサムとを比較して判定することもできる。

【0140】更にまた、上記データ量とチェックサムを用いる判定に加えて、印刷データSbにおける予め定められた複数のアドレスに位置するデータをデータ量及びチェックサムと共に記憶しておき、それを再度受信した印刷データと比較して判定することもできる。

【0141】これらの同一の印刷データを判定するために必要な情報と上記演算補助値とを対応づけて複数記憶しておくことで、同一印刷データに対するプレビュー処理及び印刷処理が、データ変換器6へ連続して要求されなくとも、演算補助値を利用した迅速な時間算出ができる。

#### 【0142】(IV) プレビュー処理及び印刷処理の第2実施形態

次に、ネットワークシステムWにおいて実行されるプレビュー処理及び印刷処理の第2実施形態について、図5に示すフローチャートを用いて説明する。上述の第1実施形態においては、印刷データSbが入力されてもこれを印刷処理開始まで保存しない構成のデータ変換器6を用いた場合の実施形態について説明したが、本第2実施形態は、入力された印刷データSbを印刷処理開始まで保存しておく構成のデータ変換器6を用いた場合の実施形態である。

【0143】また、以下の説明においては、理解の容易のために、コンピュータ1とデータ変換器6並びにプリンタ7を用いたプレビュー処理及び印刷処理について説明すると共に、コンピュータ1の処理とデータ変換器6

及びプリンタ7の処理とを並行して説明する。

【0144】更に、図5に示すフローチャートにおいて、図4に示すフローチャートと同様の処理については、同一のステップ番号を付して細部の説明は省略する。

【0145】第2実施形態のプレビュー処理及び印刷処理においては、図5に示すように、始めに第1実施形態におけるステップS1及びS2が実行され、データ変換器6において受信された印刷データSbがRAM24内に一時的に記憶される（ステップS26）。

【0146】次に、当該記憶されている印刷データSbを含む他の既に記憶されている印刷データについて、当該記憶されている全ての印刷データSbのリスト（一覧表）が夫々の印刷データSbに対して識別番号を付与して生成され、当該リストがコンピュータ1に送信される（ステップS27）。そして、コンピュータ1においては、送信されてきたリストを一時的に記憶しておく（ステップS29）。

【0147】次に、コンピュータ1からプレビュー処理を実行する旨の要求信号Srとしての指示データ（指示コマンド）が、プレビュー処理の対象となる印刷データSb（ステップS29において取得したリストに含まれている印刷データSbのいずれか）を示す上記識別番号（ステップS27参照）と共に送信されると（ステップS30）これをデータ変換器6において受信後（ステップS28）、第1実施形態におけるステップS4乃至S14を実行する。

【0148】次に、コンピュータ1から実際に印刷出力を開始するか否かを示す要求信号Srとしての指示データ（指示コマンド）が印刷対象となる印刷データSb（ステップS29において取得したリストに含まれている印刷データSbのいずれか）を示す上記識別番号（ステップS27参照）と共に送信されると（ステップS31）、これをデータ変換器6において受信後（ステップS32）、それに含まれている識別番号に基づいて第1実施形態におけるステップS17乃至S22の処理を実行して印刷データSbの印刷処理を実行する。

【0149】以上説明した第2実施形態のプレビュー処理及び印刷処理によれば、入力された印刷データSbを印刷処理開始まで保存しておく構成のデータ変換器6を用いた場合でも、上記第1実施形態と同一の効果が得られる。

【0150】ここで、第2実施形態のステップS32における印刷データSbの識別方法としては上記識別番号によるものの他、RAM24がアドレス情報により印刷データSbの記憶位置を特定できる形式であれば、当該アドレス情報を用いて印刷データSbを特定してもよい。また、RAM24がファイル名により印刷データSbを特定できるものであれば、当該ファイル名を用いて印刷データSbを特定してもよい。

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【0151】なお、上述の各実施形態のアプレビュー処理及び印刷処理は、他のコンピュータ2乃至4とデータ変換器6とを用いても全く同様に実行することができる。

【0152】更に、図4又は図5に示す処理を上記ネットワークシステムW全体に渡って適用する場合に、例えば、コンピュータ1で生成した印刷データSbのアプレビュー処理をコンピュータ2のディスプレイ15を用いて実行する場合には、少なくとも上記ステップS9、S12乃至S15（S31）及びS19の処理は当該アプレビュー処理を行うコンピュータ2において実行される。このときには、データ変換器6において表示データSaをコンピュータ2に返信することとなる。

【0153】更にまた、上述の各実施形態においては、実際に印刷処理を実行する前の事前処理としてアプレビュー処理を実行しつつ所要時間を演算する場合について説明したが、これ以外に、例えば、実際に印刷処理を実行する前の事前処理として、印刷データSbに対する仮印刷（試し印刷）を実行し、その際に所要時間を演算して演算補助値を記憶するようにしてもよい。

【0154】この場合にも、仮印刷時の実測により算出された処理時間を示す演算補助値に基づいて実際の印刷時における処理時間が生成されることとなり、より正確に処理時間を算出することができる。

【0155】また、上述の各実施形態においては、データ変換器6とプリンタ7とを別個独立の装置として説明したが、これ以外にも、プリンタそのものに上記データ変換器としての機能を持たせることも可能である。この場合には、本発明に係る動作を示すプログラムを、コンピュータからの印刷データSbをビットマップデータに展開するための、いわゆるRIP（Raster Image Processor）プログラムとしてプリンタ内に内蔵するようにすることができる。

【0156】更に、上述の実施形態に係る動作（図4参照）に係るプログラムを記録媒体としてのフレキシブルディスク等に記録させ、必要に応じて、コンピュータ内の上記RAMを構成するハードディスク装置内に記憶させて利用するようにしてもよい。

【0157】更にまた、本発明は、プリンタを用いて印刷出力におけるアプレビューだけでなく、例えば、テレビ会議において、そのディスプレイに表示する画像を予め確認してから表示するようなときに適用することもできる。

【0158】

【発明の効果】以上説明したように、請求項1に記載の発明によれば、印刷処理する際に必要な処理時間を実際の印刷前に算出し、当該算出された処理時間を示す時間情報を記憶すると共に、実際の印刷時において、記憶されている時間情報を用いて実処理時間を生成して告知するので、実際の印刷時において、印刷処理に必要な実処理時間を迅速に認識することができる。

【0159】よって、実際の印刷時における印刷データの印刷を迅速に実行することができる。

【0160】請求項2に記載の発明によれば、請求項1に記載の発明の効果に加えて、記憶手段が処理時間自体を時間情報として記憶し、当該処理時間を読み出して実処理時間として告知手段に出力するので、印刷時間そのものを記憶しておくことにより、実際の印刷時において、より迅速に実処理時間を認識することができる。

【0161】請求項3に記載の発明によれば、請求項1に記載の発明の効果に加えて、変化時間情報と一定時間情報とを記憶すると共に、記憶されている変化時間情報及び一定時間情報並びに実際の印刷時における印刷態様に基づいて実処理時間を生成するので、事前の処理時間算出時と印刷態様が異なる場合でも、実際の印刷時において迅速に実処理時間を認識することができる。

【0162】請求項4に記載の発明によれば、請求項1から3のいずれか一項に記載の発明の効果に加えて、印刷処理はイメージ表示処理と仮印刷処理とを含むと共に、算出手段はイメージ表示処理及び仮印刷処理のうち少なくとも一方を印刷前に実際に実行することにより処理時間を算出するので、実測により算出された処理時間を示す時間情報に基づいて実際の印刷時における実処理時間が生成されることとなり、より正確に実処理時間を生成することができる。

【0163】請求項5に記載の発明によれば、請求項1から4のいずれか一項に記載の発明の効果に加えて、複数のデータ生成装置により変換装置及び印刷装置を共用する印刷システムであっても、実際の印刷時にデータ生成装置において実処理時間を迅速に認識することができる。

【0164】請求項6に記載の発明によれば、印刷処理する際に必要な処理時間を実際の印刷前に算出し、当該算出された処理時間を示す時間情報を記憶すると共に、実際の印刷時において、記憶されている時間情報を用いて実処理時間を生成して告知するので、実際の印刷時において、印刷処理に必要な実処理時間を迅速に認識することができる。

【0165】よって、実際の印刷時における印刷データの印刷を迅速に実行することができる。

【0166】請求項7に記載の発明によれば、請求項6に記載の発明の効果に加えて、記憶手段が処理時間自体を時間情報として記憶し、当該処理時間を読み出して実処理時間として告知手段に出力するので、印刷時間そのものを記憶しておくことにより、実際の印刷時において、より迅速に実処理時間を認識することができる。

【0167】請求項8に記載の発明によれば、請求項6に記載の発明の効果に加えて、変化時間情報と一定時間情報とを記憶すると共に、記憶されている変化時間情報及び一定時間情報並びに実際の印刷時における印刷態様に基づいて実処理時間を生成するので、事前の処理時間

算出時と印刷態様が異なる場合でも、実際の印刷時において迅速に実処理時間を認識することができる。

【0168】請求項9に記載の発明によれば、請求項6から8のいずれか一項に記載の発明の効果に加えて、印刷処理はイメージ表示処理と仮印刷処理とを含むと共に、算出手段はイメージ表示処理及び仮印刷処理のうち少なくとも一方を印刷前に実際に実行することにより処理時間を算出するので、実測により算出された処理時間を示す時間情報に基づいて実際の印刷時における実処理時間が生成されることとなり、より正確に実処理時間を生成することができる。

【0169】請求項10に記載の発明によれば、請求項6から9のいずれか一項に記載の発明の効果に加えて、複数のデータ生成装置により変換装置及び印刷装置を共用する印刷システムであっても、実際の印刷時にデータ生成装置において実処理時間を迅速に認識することができる。

【0170】請求項11に記載の発明によれば、印刷処理する際に必要な処理時間を実際の印刷前に算出し、当該算出された処理時間を示す時間情報を記憶すると共に、実際の印刷時において、記憶されている時間情報を用いて実処理時間を生成して告知するので、実際の印刷時において、印刷処理に必要な実処理時間を迅速に認識することができる。

【0171】よって、実際の印刷時における印刷データの印刷を迅速に実行することができる。

【0172】請求項12に記載の発明によれば、請求項11に記載の発明の効果に加えて、記憶手段が処理時間自体を時間情報として記憶し、当該処理時間を読み出して実処理時間として告知手段に出力するので、印刷時間そのものを記憶しておくことにより、実際の印刷時において、より迅速に実処理時間を認識することができる。

【0173】請求項13に記載の発明によれば、請求項11に記載の発明の効果に加えて、変化時間情報と一定時間情報とを記憶すると共に、記憶されている変化時間情報及び一定時間情報並びに実際の印刷時における印刷態様に基づいて実処理時間を生成するので、事前の処理時間算出時と印刷態様が異なる場合でも、実際の印刷時において迅速に実処理時間を認識することができる。

【0174】請求項14に記載の発明によれば、請求項11から13のいずれか一項に記載の発明の効果に加えて、印刷処理はイメージ表示処理と仮印刷処理とを含む

と共に、算出手段はイメージ表示処理及び仮印刷処理のうち少なくとも一方を印刷前に実際に実行することにより処理時間を算出するので、実測により算出された処理時間を示す時間情報に基づいて実際の印刷時における実処理時間が生成されることとなり、より正確に実処理時間を生成することができる。

【図面の簡単な説明】

【図1】実施形態のネットワークシステムの構成を示すブロック図である。

10 【図2】コンピュータ及びプリンタの細部構成を示すブロック図であり、(a)はコンピュータの細部構成を示すブロック図であり、(b)はプリンタの細部構成を示すブロック図である。

【図3】データ変換器の細部構成を示すブロック図である。

【図4】第1実施形態のプレビュー処理及び印刷処理の動作を示すフローチャートである。

【図5】第2実施形態のプレビュー処理及び印刷処理の動作を示すフローチャートである。

20 【符号の説明】

1、2、3、4…コンピュータ

5…切替器

6…データ変換器

7…プリンタ

10、17、23、25a、26a…CPU

11…入力部

12、18…ネットワーク接続部

13、19、25b、26b、36…ROM

14、20、24、25c、26c…RAM

30 15…ディスプレイ

16、21a、27…バス

21…出力エンジン

22a、22b…インターフェース

25…ビットマップデータ生成部

26…表示データ生成部

35…変換データROM

35a…フォントデータ

35b…変換規則データ

W…ネットワークシステム

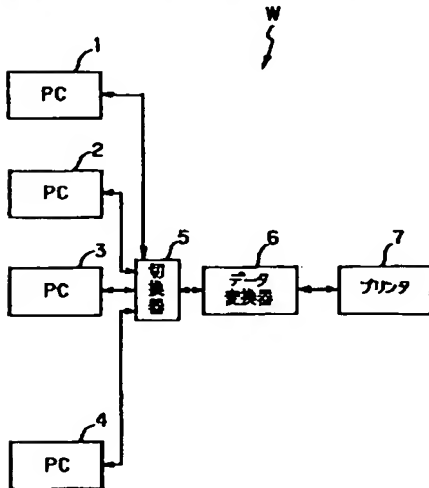
40 Sa…表示データ

Sb…出力データ

Sr…要求信号

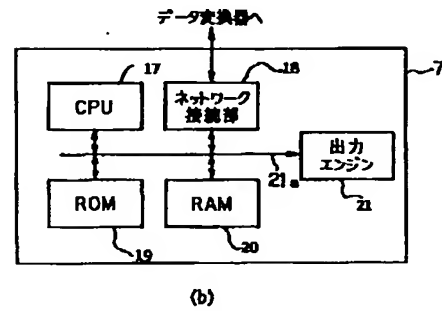
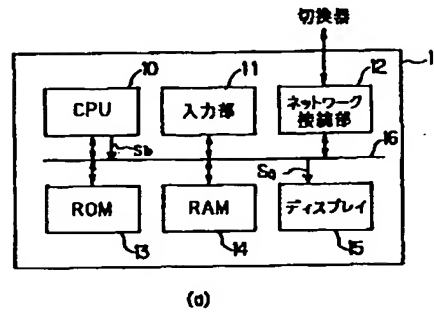
【図1】

実施形態のネットワークシステムの構成を示すブロック図



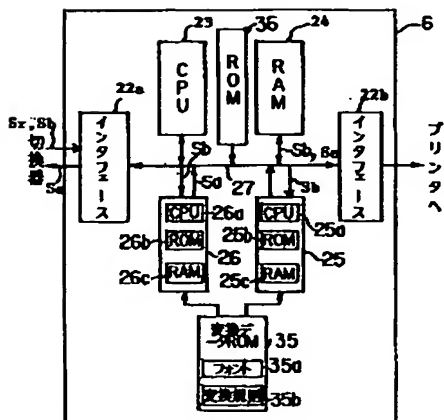
【図2】

エディタ及びプリンタの内部構成を示すブロック図



【図3】

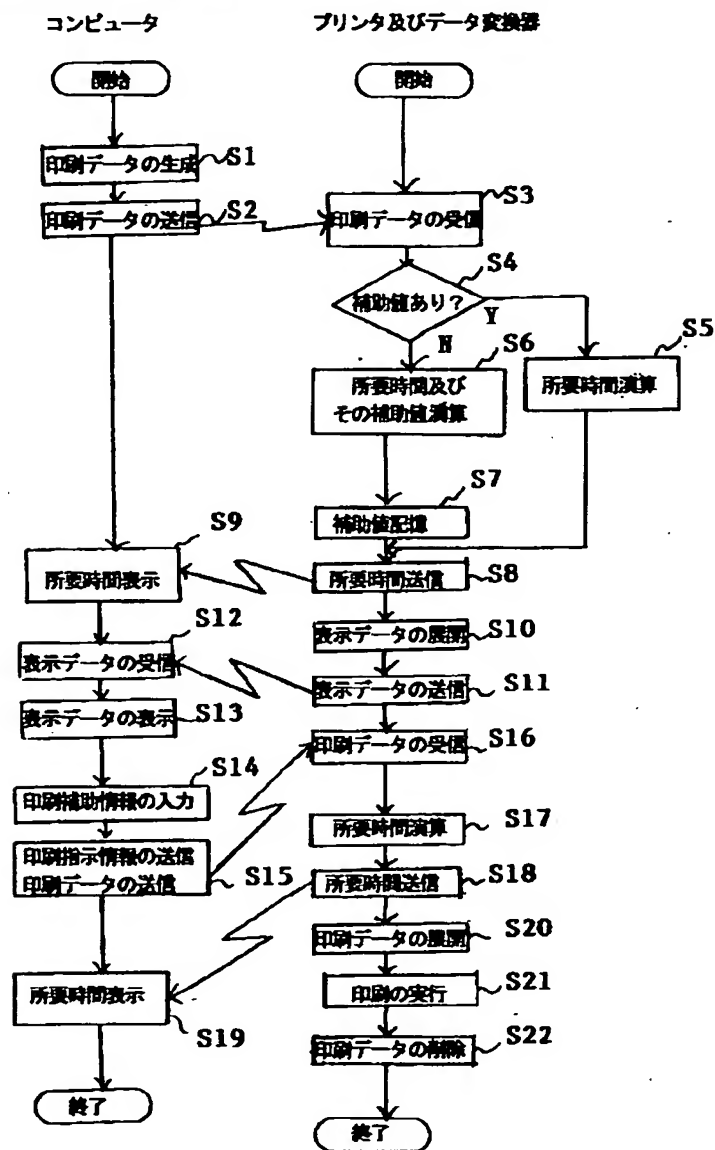
データ変換器の詳細構成を示すブロック図





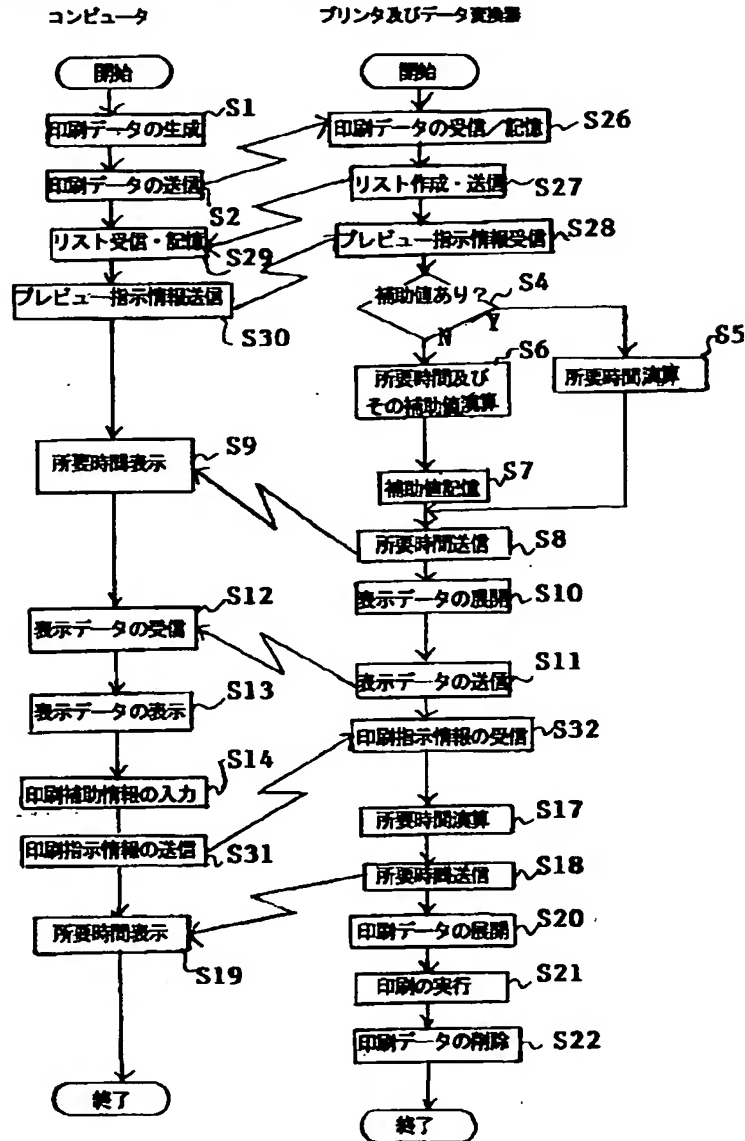
【図4】

第1実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



【図5】

第2実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



No. Publication No.

Title

1. 10 - 315576(1998) PRINTING SYSTEM, PRINTING METHOD AND RECORDING MEDIUM  
WHEREIN PRINTING CONTROL PROGRAM IS RECORDED

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G06F 3/12

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(22)Date of filing : 19.05.1997

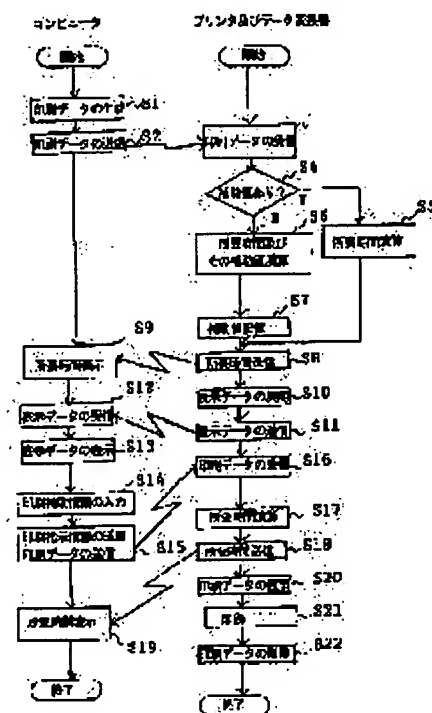
(72)Inventor : AOKI KAZUMA

(54) PRINTING SYSTEM, PRINTING METHOD AND RECORDING MEDIUM WHEREIN PRINTING CONTROL PROGRAM IS RECORDED

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a printing system and others which enable quick execution of estimating computation of a processing time and quick execution of a primary print output processing.

SOLUTION: A processing time required on the occasion of a printing processing of print data is calculated before actual printing (S5, S6) and time information on an operational auxiliary value and the like showing the calculated processing time is stored (S7). At the time of the actual printing, a processing time required for an actual printing processing is calculated by using the stored time information (S17) and the calculated processing time is notified (S19).



## LEGAL STATUS

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[JP,10-315576,A]

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION  
TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS CORRECTION OR  
AMENDMENT

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[Translation done.]

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## CLAIMS

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### [Claim(s)]

[Claim 1] A calculation means to compute the required processing time before actual printing in the printing system which prints the print data which should be printed in case printing processing of said print data is carried out, In a storage means to memorize the hour entry which shows said computed processing time, and the time of said actual printing The printing system characterized by having a generation means to generate the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and a notice means to notify of said generated real processing time.

[Claim 2] It is the printing system characterized by for said generation means reading the processing time concerned from said storage means while said storage means memorizes said processing time itself as said hour entry in a printing system according to claim 1, and outputting to said notice means as said real processing time.

[Claim 3] In a printing system according to claim 1 said storage means The change hour entry which shows the change time amount which is said partial processing time which changes among the partial processing times which constitute said processing time depending on the printing mode of said print data, While memorizing the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing, said generation means The printing system characterized by generating said real processing time based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[Claim 4] It is the printing system are a printing system given in any 1 term of claims 1-3, and carry out that said calculation means computes said processing time by actually performing at least one side before said printing among said image display process and said temporary printing processing as the description while said printing processing includes the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily.

[Claim 5] The data generation equipment which is a printing system given in any 1 term of claims 1-4, and generates said print data, The inverter which changes said generated print data into the conversion print data used in case [ said ] it prints, The printing system characterized by including said notice means in said data generation equipment while said calculation means, said storage means, and said generation means are included in said inverter including the airline printer which carries out the printout of said conversion print data.

[Claim 6] The calculation process which is the printing approach in the printing system which prints the print data which should be printed, and computes the required processing time before actual printing in case printing processing of said print data is carried out, In the storage process which memorizes the hour entry which shows said computed processing time, and the time of said actual printing The printing approach characterized by having the generation process which generates the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and the notice process which notifies of said generated real processing time.

[Claim 7] The printing approach characterized by reading the processing time concerned from said storage means, and outputting to said notice means as said real processing time in said generation process in said storage process in the printing approach according to claim 6 while memorizing said processing time itself as said hour entry.

[Claim 8] The change hour entry which shows the change time amount which is said partial processing time which changes in said storage process in the printing approach according to claim 6 among the partial processing times which constitute said processing time depending on the printing mode of said print data, While memorizing the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing The printing approach characterized by setting at said generation process and generating said real processing time based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

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[Claim 9] It is the printing approach of being the printing approach given in any 1 term of claims 6-8, and carrying out computing said processing time in said calculation process by actually performing at least one side before said printing among said image display process and said temporary printing processing while said printing processing includes the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily as the description.

[Claim 10] It is the printing approach given in any 1 term of claims 6-9. Said printing system The data generation equipment which generates said print data, and the inverter which changes said generated print data into the conversion print data used in case [ said ] it prints, It is the printing approach characterized by performing said notice process in said data generation equipment while said calculation process, said storage process, and said generation process are performed in said inverter including the airline printer which carries out the printout of said conversion print data.

[Claim 11] The computer contained in the printing system which prints the print data which should be printed In the time of a calculation means to compute the processing time required in case printing processing of said print data is carried out before actual printing, a storage control means to make a storage means memorize the hour entry which shows said computed processing time, and said actual printing The record medium characterized by recording the printing control program for considering as a generation means to generate the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and a notice means to notify of said generated real processing time, and making it function.

[Claim 12] In the record medium with which the printing control program according to claim 11 was recorded, the computer which functions as said storage control means While making said storage means memorize by making said processing time itself into said hour entry, the computer which functions as said generation means The record medium with which the printing control program characterized by outputting to the computer which reads the processing time concerned from said storage means, and functions as said notice means as said real processing time was recorded.

[Claim 13] In the record medium with which the printing control program according to claim 11 was recorded, the computer which functions as said storage control means The change hour entry which shows the change time amount which is said partial processing time which changes among the partial processing times which constitute said processing time depending on the printing mode of said print data, While making said storage means memorize the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing, the computer which functions as said generation means The record medium with which the printing control program characterized by generating said real processing time based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized was recorded.

[Claim 14] In the record medium with which the printing control program of a publication was recorded on any 1 term of claims 11-13 said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily, the computer which functions as said calculation means The record medium with which the printing control program characterized by computing said processing time by actually performing at least one side before said printing among said image display processing and said temporary printing processing was recorded.

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[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention belongs to the technical field of a printing system equipped with the configuration of which presumes the processing time which printing takes and a user is notified before actual printing in the printing system which prints print data.

[0002]

[Description of the Prior Art] In case print data, such as a document or an image, are printed conventionally, the processing of which carries out the presumed operation of the duration which the printing concerned takes, and a user is notified is known. When sharing one set of a printer by two or more computers, or in case a huge quantity of print data are printed, this notice processing can predict a printing finish time beforehand, and is processing very useful at the point that a user can perform other business etc. in the meantime.

[0003] In what considers as the approach of carrying out the presumed operation of this processing time, and is known conventionally The printing processing time of print data (text data) For example, the number of alphabetic characters, How to compute in consideration of the existence of a special symbol and an underline, and the existence of a ruled line (refer to JP,64-38824,A), How to compute the total value of the value with reference to the table on which the processing time corresponding to each command which analyzed the command in print data and was analyzed further is described (refer to JP,2-57367,A or JP,4-146165,A), Or print data are analyzed and there is a method (refer to JP,3-164927,A) of finding the processing time proportional to the number of pages contained in it etc.

[0004]

[Problem(s) to be Solved by the Invention] However, in the conventional approach including the describing [ above ] all directions method, after the duration is directed to printing initiation for every time of actual printing of print data, it is common to compute by actually computing the processing time of all processings performed by a printing result being obtained, respectively, and totaling them.

[0005] Therefore, print data were a huge amount, or when it was print data to be complicatedly, the presumed data processing of the duration concerned itself took time amount, and there was a trouble that it will be overdue for original printing processing to be unable to begin easily and to obtain a printing result final as a result.

[0006] Since a presumed operation is similarly performed in the original printout processing concerned about this trouble even when it is going to perform an original printout anew after, performing preview processing which checks the outline of a printing result by a screen display etc., and temporary printing (trial printing) of print data for example, the same trouble will exist.

[0007] Then, this invention was made in view of each above-mentioned trouble, and the technical problem is in offering the record medium which recorded the printing control program on the printing system which the presumed operation of the processing time is performed quickly and can perform original printout processing quickly, and the printing approach list.

[0008]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, invention according to claim 1 Calculation means, such as CPU which computes the processing time required in case printing processing of said print data is carried out before actual printing in the printing system which prints the print data which should be printed, In storage means to memorize the hour entry which shows said computed processing time, such as RAM, and the time of said actual printing It has generation means, such as CPU which generates the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and notice means, such as CPU which notifies of said generated real processing time.

[0009] According to the operation of invention according to claim 1, a calculation means computes the required processing time before actual printing, in case printing processing of the print data is carried out.

[0010] And a storage means memorizes the hour entry which shows the computed processing time.

[0011] Then, a generation means generates the real processing time using the hour entry memorized at the time of actual printing.

[0012] Finally, a notice means notifies of the generated real processing time.

[0013] Therefore, the real processing time required for printing can be quickly recognized at the time of actual printing.

[0014] In order to solve the above-mentioned technical problem, while, as for said storage means, invention according to claim 2 memorizes said processing time itself as said hour entry in a printing system according to claim 1, said generation means reads the processing time concerned from said storage means, and it is constituted so that it may output to said notice means as said real processing time.

[0015] According to the operation of invention according to claim 2, in addition to an operation of invention according to claim 1, a storage means memorizes the processing time itself as a hour entry.

[0016] And a generation means reads the processing time concerned from a storage means, and outputs it to a notice means as the real processing time.

[0017] Therefore, since the processing time itself is memorized, the real processing time can be more quickly recognized at the time of actual printing.

[0018] In order to solve the above-mentioned technical problem, invention according to claim 3 In a printing system according to claim 1 said storage means The change hour entry which shows the change time amount which is said partial processing time which changes among the partial processing times which constitute said processing time depending on the printing mode of said print data, While memorizing the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing, said generation means It is constituted so that said real processing time may be generated based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[0019] While a storage means memorizes [ according to the operation of invention according to claim 3 ] a change hour entry and a fixed hour entry in addition to an operation of invention according to claim 1, a generation means generates the real processing time based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized.

[0020] Therefore, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0021] In order to solve the above-mentioned technical problem, invention according to claim 4 It is a printing system given in any 1 term of claims 1-3. Said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily, said calculation means By actually performing at least one side before said printing among said image display processing and said temporary printing processing, it is constituted so that said processing time may be computed.

[0022] According to the operation of invention according to claim 4, while printing processing includes an image display process and temporary printing processing in any 1 term of claims 1-3 in addition to an operation of invention of a publication, a calculation means computes the processing time by actually performing among an image display process and temporary printing processing, before printing at least one side.

[0023] Therefore, since the processing time is generated based on the hour entry which shows the processing time computed by the observation, the real processing time can be generated more correctly.

[0024] In order to solve the above-mentioned technical problem, invention according to claim 5 Data generation equipments, such as a computer which is a printing system given in any 1 term of claims 1-4, and generates said print data, Inverters which change said generated print data into the conversion print data used in case [ said ] it prints, such as a data converter, While said calculation means, said storage means, and said generation means are included in said inverter including airline printers, such as a printer which carries out the printout of said conversion print data, it is constituted as said notice means is included in said data generation equipment.

[0025] According to the operation of invention according to claim 5, in addition to an operation of invention of a publication, data generation equipment generates print data in any 1 term of claims 1-4.

[0026] And an inverter changes the generated print data into conversion print data.

[0027] Furthermore, an airline printer carries out the printout of the conversion print data.

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[0028] While the calculation means, the storage means, and the generation means are included in the inverter at this time, the notice means is included in data generation equipment.

[0029] Therefore, even if it is the printing system which shares an inverter and an airline printer with two or more data generation equipments, in data generation equipment, the real processing time can be quickly recognized at the time of actual printing.

[0030] In order to solve the above-mentioned technical problem, invention according to claim 6 The calculation process which is the printing approach in the printing system which prints the print data which should be printed, and computes the required processing time before actual printing in case printing processing of said print data is carried out. In the storage process which memorizes the hour entry which shows said computed processing time, and the time of said actual printing It has the generation process which generates the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and the notice process which notifies of said generated real processing time.

[0031] According to the operation of invention according to claim 6, in a calculation process, in case printing processing of the print data is carried out, the required processing time is computed before actual printing.

[0032] And in a storage process, the hour entry which shows the computed processing time is memorized.

[0033] Then, in a generation process, the real processing time is generated using the hour entry memorized at the time of actual printing.

[0034] Finally, in a notice process, it notifies of the generated real processing time.

[0035] Therefore, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0036] In said storage process, in said generation process, invention according to claim 7 reads the processing time concerned from said storage means, and in order to solve the above-mentioned technical problem, while memorizing said processing time itself as said hour entry, it is constituted in the printing approach according to claim 6 so that it may output to said notice means as said real processing time.

[0037] According to the operation of invention according to claim 7, in addition to an operation of invention according to claim 6, in a storage process, the processing time itself is memorized as a hour entry.

[0038] And in a generation process, the processing time concerned is read from a storage means, and it outputs to a notice means as the real processing time.

[0039] Therefore, since the processing time itself is memorized, the real processing time can be more quickly recognized at the time of actual printing.

[0040] In order to solve the above-mentioned technical problem, invention according to claim 8 The change hour entry which shows the change time amount which is said partial processing time which changes in said storage process in the printing approach according to claim 6 among the partial processing times which constitute said processing time depending on the printing mode of said print data, While memorizing the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing It sets at said generation process, and it is constituted so that said real processing time may be generated based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[0041] According to the operation of invention according to claim 8, while memorizing a change hour entry and a fixed hour entry in a storage process in addition to an operation of invention according to claim 6, in a generation process, the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized.

[0042] Therefore, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0043] In order to solve the above-mentioned technical problem, invention according to claim 9 It is the printing approach given in any 1 term of claims 6-8. Said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily In said calculation process, by actually performing at least one side before said printing among said image display processing and said temporary printing processing, it is constituted so that said processing time may be computed.

[0044] According to the operation of invention according to claim 9, while printing processing includes an image display process and temporary printing processing in addition to an operation of invention given in any 1 term of claims 6-8, the processing time is computed by actually performing among an image display process and temporary printing processing, in a calculation process, before printing at least one side.

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[0045] Therefore, since the processing time is generated based on the hour entry which shows the processing time computed by the observation, the real processing time can be generated more correctly.

[0046] In order to solve the above-mentioned technical problem, invention according to claim 10 It is the printing approach given in any 1 term of claims 6-9. Said printing system The data generation equipment which generates said print data, and the inverter which changes said generated print data into the conversion print data used in case [ said ] it prints, While said calculation process, said storage process, and said generation process are performed in said inverter including the airline printer which carries out the printout of said conversion print data, said notice process is constituted so that it may perform in said data generation equipment.

[0047] According to the operation of invention according to claim 10, in addition to an operation of invention of a publication, in data generation equipment, generation of print data is carried out to any 1 term of claims 6-9, and the print data generated in the inverter are changed into conversion print data. And the printout of the conversion print data is carried out in an airline printer.

[0048] While a calculation process, a storage process, and a generation process are performed in an inverter at this time, a notice process is performed in data generation equipment.

[0049] Therefore, also in the printing system which shares an inverter and an airline printer with two or more data generation equipments, the real processing time can be quickly recognized in data generation equipment at the time of actual printing.

[0050] In order to solve the above-mentioned technical problem, invention according to claim 11 The computer contained in the printing system which prints the print data which should be printed In the time of a calculation means to compute the processing time required in case printing processing of said print data is carried out before actual printing, a storage control means to make a storage means memorize the hour entry which shows said computed processing time, and said actual printing The printing control program for considering as a generation means to generate the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and a notice means to notify of said generated real processing time, and making it function is recorded and constituted.

[0051] According to the operation of invention according to claim 11, the computer which functions as a calculation means computes the required processing time before actual printing, in case printing processing of the print data is carried out.

[0052] And the computer which functions as a storage control means makes a storage means memorize the hour entry which shows the computed processing time.

[0053] Then, the computer which functions as a generation means generates the real processing time using the hour entry memorized at the time of actual printing.

[0054] Finally, the computer which functions as a notice means notifies of the generated real processing time.

[0055] Therefore, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0056] In order to solve the above-mentioned technical problem, invention according to claim 12 In the record medium with which the printing control program according to claim 11 was recorded, the computer which functions as said storage control means While making said storage means memorize by making said processing time itself into said hour entry, the computer which functions as said generation means reads the processing time concerned from said storage means, and it is constituted so that it may output to the computer which functions as said notice means as said real processing time.

[0057] According to the operation of invention according to claim 12, a storage means is made to memorize the computer which functions as a storage control means by making the processing time itself into a hour entry in addition to an operation of invention according to claim 11.

[0058] And the computer which functions as a generation means reads the processing time concerned from a storage means, and outputs it to the computer which functions as a notice means as the real processing time.

[0059] Therefore, since the processing time itself is memorized, the real processing time can be more quickly recognized at the time of actual printing.

[0060] In order to solve the above-mentioned technical problem, invention according to claim 13 In the record medium with which the printing control program according to claim 11 was recorded, the computer which functions as said storage control means The change hour entry which shows the change time amount which is said partial processing time which changes among the partial processing times which constitute said processing time depending on the printing mode of said print data, While making said storage means memorize the fixed hour entry which shows fixed time

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amount which is said fixed partial processing time corresponding to said printing processing, the computer which functions as said generation means It is constituted so that said real processing time may be generated based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[0061] While the computer which functions as a storage control means memorizes [ according to the operation of invention according to claim 13 ] a change hour entry and a fixed hour entry in addition to an operation of invention according to claim 11, the computer which functions as a generation means generates the real processing time based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized.

[0062] Therefore, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0063] In order to solve the above-mentioned technical problem, invention according to claim 14 In the record medium with which the printing control program of a publication was recorded on any 1 term of claims 11-13 said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily, the computer which functions as said calculation means By actually performing at least one side before said printing among said image display processing and said temporary printing processing, it is constituted so that said processing time may be computed.

[0064] While printing processing includes [ according to the operation of invention according to claim 14 ] image display processing and temporary printing processing in any 1 term of claims 11-13 in addition to an operation of invention of a publication, the computer which functions as a calculation means computes the processing time by actually performing among image display processing and temporary printing processing, before printing at least one side.

[0065] Therefore, since the processing time is generated based on the hour entry which shows the processing time computed by the observation, the real processing time can be generated more correctly.

[0066]

[Embodiment of the Invention] Next, the gestalt of the suitable operation for this invention is explained based on a drawing. In addition, the gestalt of the operation explained below is a gestalt of operation when two or more computers as data generation equipment apply this invention to the output control in the case of carrying out joint use of the printer concerned by each computer in the network system connected to the printer as an output unit through the data converters (specifically for example, data server etc.) of 1 as an inverter.

[0067] (I) Drawing 1 is used and explained about the configuration of the network system of an operation gestalt at the beginning of a whole configuration.

[0068] As shown in drawing 1 , the network system W of an operation gestalt is constituted by four computers 1 thru/or 4, the data converter 6, the change-over machine 5 that connects a computer 1 thru/or each 4 and data converter 6, and the printer 7.

[0069] In this configuration, each computer 1 thru/or 4 generate the print data which should be carried out a printout in a printer 7 using the application software with which each is equipped, and outputs them to the change-over machine 5. Here, as the above-mentioned output data, it is created by the Page Description Language of common knowledge, such as "PostScript" etc. of an Adobe company, for example. Furthermore, in parallel to this, each computer 1 thru/or 4 perform the below-mentioned preview processing.

[0070] Here, the processing which displays the mode (namely, modes, such as a layout of a font, a graphic size, and the whole and color arrangement) of the printout data (the so-called bit map data) with which the printout of the preview processing is carried out before the printout in the printer 7 using the above-mentioned print data corresponding to the above-mentioned print data to the below-mentioned display which was included in each computer 1 thru/or 4, or was prepared apart from the computer concerned is said.

[0071] The change-over machine 5 is equipped with the buffer section which memorizes temporarily each computer 1 thru/or the print data from 4, and outputs these print data to a data converter 6 in time sharing for every computer.

[0072] Furthermore, the change-over machine 5 distributes the below-mentioned indicative data outputted from a data converter 6 to each computer.

[0073] On the other hand, it develops to the printout data (printing bit map data are called hereafter.) for carrying out a printout in a printer 7 using the translation data with which the data converter 6 concerned holds the print data transmitted through the change-over machine 5 from each computer 1 thru/or 4, and a data converter 6 is outputted to a printer 7. Furthermore, a data converter 6 performs below-mentioned preview processing and printing processing.

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[0074] And a printer 7 performs a corresponding printout based on the outputted printing bit map data.

[0075] (II) A details configuration, next the details configuration of each configuration member which constitutes the above-mentioned network system W are explained using drawing 2 and drawing 3.

[0076] Introduction, a computer 1 or the configuration of 4, and actuation are explained using drawing 2 (a). In addition, since each computer 1 thru/or 4 perform the respectively same configuration and actuation, it is represented with the following explanation and explains a computer 1 by it.

[0077] As shown in drawing 2 (a), a computer 1 CPU10 as a notice means to perform the below-mentioned preview processing by executing each instruction which reads the program memorized by ROM13 and is included in it, The input section 11 which consists of a keyboard, a mouse, etc., and the network connection section 12, ROM13 as a record medium (ReadOnly Memory), It is constituted by the display 15 as a notice means which consists of RAM (Random Access Memory)14, CRT (Cathode Ray Tube), or liquid crystal, and the bus 16 which connects each configuration member in a computer 1.

[0078] In the above-mentioned configuration, it connects with the change-over machine 5, and the network connection section 12 performs the so-called interface actuation to the data inputted into the data and the computer 1 which are outputted from a computer 1.

[0079] On the other hand, the input section 11 outputs it to CPU10 grade through a bus 16, when data required for the processing in a computer 1 are inputted.

[0080] ROM13 is read-only memory which has memorized the program for control of the computer 1 whole (the program corresponding to the flow chart for the below-mentioned preview processing is included.), reads a program required of predetermined timing, and outputs it to a bus 16.

[0081] Moreover, in fact, RAM14 is constituted by stores, such as a hard disk drive unit, etc., memorizes temporarily data required for the processing in CPU10 etc., and outputs them to a bus 16 if needed.

[0082] Furthermore, a display 15 displays the image corresponding to the below-mentioned indicative data Sa, and displays the further below-mentioned processing time while it performs a display required for the processing in CPU10.

[0083] Finally, CPU10 controls each configuration member which constitutes a computer 1 while it processes document preparation, an image processing, etc. which correspond using the application program memorized by RAM14 and generates print data Sb.

[0084] In addition, about actuation of the computer 1 in the preview processing concerning this invention, the back explains it collectively.

[0085] Next, the configuration and actuation of a printer 7 are explained using drawing 2 (b).

[0086] The printer 7 is constituted by CPU17, the network connection section 18, ROM19 and RAM20, the output engine 21, and bus 21a as shown in drawing 2 (b).

[0087] In this configuration, it connects with the data converter 6 and the network connection section 18 performs interface actuation to the printing bit map data (data of a bit map format) which should be carried out a printout in the printer 7 concerned inputted into a printer 7.

[0088] On the other hand, CPU17 controls each configuration member which constitutes a printer 7, and performs the printout of the printing bit map data concerned.

[0089] Moreover, ROM19 is memory which has memorized the program for control of the printer 7 whole, reads a program required of predetermined timing, and outputs it to bus 21a.

[0090] Furthermore, RAM20 memorizes temporarily data required for the processing in CPU17 etc., and outputs them to a bus 21 if needed.

[0091] Finally, the output engine 21 is equipped with the printing sections, such as an ink jet method or an electrophotography method, and performs printout processing of actual printing bit map data under control of CPU16.

[0092] In addition, about actuation of the printer 7 in the preview processing and printing processing concerning this invention, the back explains it collectively.

[0093] Finally, drawing 3 is used and explained about the configuration and actuation of a data converter 6.

[0094] As shown in drawing 3, a data converter 6 Interfaces 22a and 22b, CPU23 as a calculation means to execute each instruction which reads the program memorized by ROM36 and is included in it, and to perform below-mentioned preview processing and printing processing, and a generation means, It is constituted by ROM36 as a record medium, RAM24 as a storage means, the bit map data generation section 25, the indicative-data generation section 26, the bus 27, and translation data ROM35.

[0095] Furthermore, the bit map data generation section 25 builds in the logic operation circuit which consists of

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CPU25a, ROM25b, and RAM25c, and the indicative-data generation section 26 builds in the logic operation circuit which consists of CPU26a, ROM26b, and RAM26c. Here, ROM25b has memorized the program for printing bit map data generation, and ROM26b has memorized the required program, in case CPU26a controls the indicative-data generation section 26.

[0096] In this configuration, interface 22a is outputted to an interface actuation deed and a bus 27 to each computer 1 thru/or the data from 4 through the change-over machine 5.

[0097] And CPU23 performs the output of each computer 1 through the change-over machine 5 of the below-mentioned indicative data Sa to the printer 7 of the generated below-mentioned printing bit map data outputted and generated thru/or 4 based on the below-mentioned demand signal Sr transmitted from each computer 1 thru/or 4 while controlling the data converter 6 whole.

[0098] Furthermore, by processing according to the below-mentioned flow chart, CPU23 computes the below-mentioned duration and transmits it to a computer 1 thru/or 4.

[0099] Next, RAM24 memorizes temporarily each computer 1 thru/or the print data Sb from 4, etc. inputted into the data converter 6, and outputs them to a bus 27 if needed. While memorizing temporarily the printing bit map data generated in the below-mentioned bit map data generation section 25 in parallel to this and outputting them to a printer 7 through a bus 27 under control of CPU23, RAM24 The indicative data Sa generated in the below-mentioned indicative-data generation section 26 is memorized temporarily, and it outputs to a printer 7 through a bus 27 under control of CPU23 a computer 1 thru/or 4.

[0100] ROM36 is read-only memory which has memorized the program for control of the data converter 6 whole (the program corresponding to the flow chart the below-mentioned preview processing and for printing processing is included.), reads a program required of predetermined timing, and outputs it to a bus 27.

[0101] Next, translation data ROM35 is ROM which has memorized the translation data for changing into printing bit map data the print data Sb (page descriptive data created by the Page Description Language) inputted from the computer 1, and the translation data concerned is shared in the bit map data generation section 25 and the indicative-data generation section 26. And these are read if needed including transformation-rule data 35b for interpreting each command code in print data Sb (Page Description Language) as concrete translation data, and drawing a graphic form etc., and font (font) data (outline data) 30a corresponding to the so-called character code contained in print data Sb.

[0102] On the other hand, the bit map data generation section 25 carries out expansion processing at the printing bit map data for carrying out the printout of each computer 1 thru/or the print data Sb from 4 in a printer 7, and is outputted to RAM23. That is, the command code and the above-mentioned character code in print data Sb are read, transformation-rule data 35b or font data 35a corresponding to each is further read from translation data ROM35, and the graphic form corresponding to command code and the font corresponding to a character code are made to memorize in a bit map format in the page memory in RAM23.

[0103] In addition, in expansion processing in the bit map data generation section 25, printing bit map data are generated for every page which actually carries out a printout using the above-mentioned translation data containing the font actually used for a printout in a printer 7.

[0104] And interface 22b performs interface processing to data required for the printing processing in the printers 7, such as generated printing bit map data, and outputs it to a printer 7.

[0105] Finally, corresponding to the demand signal Sr transmitted from each computer 1 thru/or 4, the indicative-data generation section 26 uses the above-mentioned translation data for the above-mentioned print-data Sb (print data Sb transmitted from each computer 1 thru/or 4) list, and it generates the indicative data Sa for the below-mentioned preview processing (namely, in order to display in a display 15 as a thing corresponding to printing bit map data). That is, the same processing as generation of the printing bit map data in the bit map data generation section 25 generates the indicative data Sa of a bit map format. Since the translation data from translation data ROM35 will be shared with the bit map data generation section 25 at this time, the indicative data Sa faithful to the actual printout in a printer 7 can be generated.

[0106] In addition, actuation of the data converter 6 in the preview processing and printing processing concerning this invention is explained collectively below.

[0107] (III) The 1st operation gestalt of the preview processing performed in the 1st operation gestalt, next network system W of preview processing and printing processing and printing processing is explained using the flow chart shown in drawing 4. In preview processing and printing processing of this operation gestalt, while the indicative data Sa faithful to the print data Sb (page descriptive data) which should be carried out a printout in a printer 7 is generated and being displayed on a display 15, the duration at the time of carrying out printing processing of the print data Sb is

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computed by CPU23, and is transmitted to a computer 1 thru/or 4.

[0108] Moreover, in the following explanation, since an understanding is easy, while explaining preview processing and printing processing in which the printer 7 was used for the computer 1 and the data converter 6 list, processing of processing of a computer 1, a data converter 6, and a printer 7 is explained in parallel.

[0109] Furthermore, the operation gestalt explained below is an operation gestalt at the time of using the data converter 6 of a configuration of not saving this to printing processing initiation, even if print data Sb are inputted.

[0110] As shown in drawing 4, in preview processing and printing processing of an operation gestalt, the print data Sb (for example, a document or an image etc. which should be carried out a printout) which should be first carried out a printout in a computer 1 using a printer 7 are generated (step S1).

[0111] And the generated print data Sb concerned are transmitted to a data converter 6 through the change-over machine 5 with the demand signal Sr of preview processing (step S2), and it is received in the data converter 6 concerned (step S3).

[0112] Next, it judges whether the operation auxiliary value used in order to calculate the duration at the time of carrying out printing processing of the received print data Sb is memorized by RAM24 (step S4). And when the operation auxiliary value concerned is memorized, the presumed operation of the duration is carried out using the operation auxiliary value concerned (step S4; yes) (step S5).

[0113] Here, when the above-mentioned duration is explained, it is desirable to consider as time amount (for the time amount for the preview processing concerned to also be included when the below-mentioned preview processing is performed.) until it finishes printing it as the duration concerned from generation initiation of the printing bit map data in the bit map data generation section 25. For this reason, it sets to calculation of the duration by step S5. The time amount which generation of printing bit map data takes While computing by analyzing the contents of print data, the time amount from the completion of generation of printing bit map data to printing termination It computes by adding the time amount proportional to the predetermined printing size corresponding to printing size currently beforehand computed by the experiment etc. to the rough value of a duration required by transmission to the printer 7 of printing bit map data.

[0114] Moreover, the thing based on the actual measurement at the time of generating the indicative data for preview processing in step S10 mentioned later is sufficient as the time amount which generation of printing bit map data takes. In this case, a duration can be found more quickly.

[0115] in addition -- in addition, it is good as a duration also as time amount to the transfer to the time amount to the completion of a transfer to the printer 7 of the printing bit map data from generation initiation of printing bit map data [ in / it carries out and / the bit map data generation section 25 ] good also as time amount from generation initiation of the printing bit map data in the bit map data generation section 25 to generation termination, or other storage.

[0116] Moreover, it is not from the printing bit map data generation initiation corresponding to the target print data, and suppose that it is the \*\* term of a duration from the time amount by which the print data concerned were sent to the data converter 6. In that case, a duration can compute the time amount which the business (for example, processing of the print data which had already been accumulated in the data converter 6, and which should be processed first) which should be processed ahead of the print data concerned takes by adding to an above-mentioned duration.

[0117] When the above-mentioned operation auxiliary value is explained, next, the operation auxiliary value concerned When the same print data Sb are inputted into a data converter 6 (for example, like this operation gestalt) When printing processing is performed about the same print data Sb as the print data Sb developed as an indicative data Sa for preview processing etc., It is the auxiliary value used in the case of the operation of the above-mentioned duration of the 2nd henceforth, and once it is computed about one print data Sb, it memorizes in RAM24 like the after-mentioned.

[0118] and as a concrete value of the operation auxiliary value concerned May memorize the duration itself by which the operation was carried out [ above-mentioned ] as an operation auxiliary value corresponding to the print data Sb concerned, and Moreover, the value which \*\* (ed) time amount which changes in proportion to printing size (a dilation ratio or reduction percentage) among time amount required for printing processing by the time amount at the time of printing unit size (namely, when printing with a dilation ratio 1.0 to print data Sb) (it is only hereafter referred to as "a".) It does not depend on printing size but is fixed time amount (it is only hereafter referred to as "b".). You may divide and memorize. In the case of the latter, the actually required duration is computable as  $\text{duration} = a \times (\text{printing size}) + b$ .

[0119] Here, there is time amount for transmitting the time amount which the conversion to bit map data from vector data takes, the time amount for a bit map data transfer, or printing bit map data to a printer 7, for example as time amount which changes in proportion to the above-mentioned printing size etc.

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[0120] Furthermore, it does not depend on printing size but there are time amount for syntax analysis of print data Sb, time amount for the coordinate transformation of vector data, etc. as fixed time amount.

[0121] If a duration calculates by the approach explained to \*\*\*\* (step S5) next, a computer 1 is answered in the duration information corresponding to the duration concerned (step S8), this is received in a computer 1, an indication etc. will be given to a display 15 and a user will be notified of the duration concerned (step S9).

[0122] On the other hand, when the operation auxiliary value is not memorized (i.e., when it is the print data Sb with which the received print data Sb are not preview-processed or printing processed till then), while carrying out the presumed operation of the above-mentioned duration by CPU23 in the judgment of step S4 based on (step S4; no), next the print data Sb concerned, the above-mentioned operation auxiliary value is computed (step S6). And it memorizes to RAM24 with the information for identifying the print data Sb which correspond the computed operation auxiliary value concerned (step S7).

[0123] In addition, by backing up by a cell etc. or carrying out fixation, the field in RAM24 which memorizes an operation auxiliary value is constituted so that the operation auxiliary value which has memorized the power source of a data converter 6 also as \*\* may not disappear.

[0124] After storage of an operation auxiliary value is completed, it shifts to the above-mentioned step S8 and S9.

[0125] Next, in a data converter 6, the indicative data Sa which the indicative-data generation section 26 should display on a display 15 using the print data Sb memorized by RAM24 and the translation data containing above-mentioned font data 35a, transformation-rule data 35b, etc. is generated under control of CPU23 (step S10). (expansion) At this time, the generated indicative data Sa is data of the bit map format of the almost same mode as the mode (modes, such as a layout of a font, a graphic size, and the whole, and color arrangement) when actually carrying out the printout of the print data Sb.

[0126] And the generated indicative data Sa is transmitted to a computer 1 (step S11).

[0127] next, the voice when carrying out the printout of the image Sb corresponding to the indicative data Sa concerned, i.e., the print data, in a printer 7, if the indicative data Sa concerned is received in a computer 1 (step S12) -- like -- about -- the image (image corresponding to an indicative data Sa) done one is displayed on a display 15, and a user checks this (step S13).

[0128] And if the input of the auxiliary information at the time of actually performing printing (for example, the above-mentioned printing size at the time of printing) is performed in a computer 1 (step S14) next, directions data (directive command) will be transmitted with print data Sb as a demand signal Sr which shows whether a printout is actually started from a computer 1 (step S15).

[0129] Next, if the directions data concerned and print data Sb are received in a data converter 6 (step S16), the above-mentioned duration corresponding to the received print data Sb will be calculated using an operation auxiliary value, and a corresponding (step S17) duration will be transmitted to a computer 1 (step S18). And the duration corresponding to the duration information transmitted in the computer 1 is displayed, and a user is notified (step S19).

[0130] Furthermore, in a data converter 6, in parallel to the above-mentioned step S19, the print data Sb memorized by RAM23 are developed to printing bit map data by the bit map data generation section 25, it outputs to a printer (step S20) 7, and printing is performed using the output engine 20 in a printer 7 (step S21).

[0131] And if a printout is completed, the print data Sb memorized by RAM23 will be deleted, and processing (step S22) will be ended.

[0132] In case printing processing is carried out, while memorizing the operation auxiliary value which computes the required processing time at the time of the preview processing before actual printing, and shows the computed processing time concerned according to preview processing and printing processing of an operation gestalt in which it explained above Since it generates and notifies of the processing time using the operation auxiliary value memorized at the time of actual printing, the processing time required for printing processing can be quickly recognized at the time of actual printing.

[0133] Moreover, when memorizing the processing time itself as an operation auxiliary value, the processing time can be more quickly recognized at the time of actual printing.

[0134] Furthermore, even when the time of processing-time calculation of beforehand when dividing a duration into the information corresponding to the time amount which changes corresponding to printing size, and the information corresponding to time amount fixed irrespective of printing size and memorizing it differs from actual printing size, the processing time can be quickly recognized at the time of actual printing.

[0135] Furthermore, since the processing time is computed by actually performing before printing preview processing again, it will be based on the operation auxiliary value which shows the processing time computed by the observation,

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the processing time at the time of actual printing will be generated, and the processing time can be computed more correctly.

[0136] In addition, the information displayed in the above-mentioned step S19 may be changed and displayed on the residual time to printing processing termination other than the duration itself mentioned above, and may compute and display schedule end time. Furthermore, the rate of elapsed time to the whole duration may be computed and displayed. Furthermore, conversion to such information to display is [ in / at the above-mentioned step S18 / step S19 ] possible.

[0137] Moreover, in step S3 and step S16, it is necessary to judge whether they are the print data as the print data Sb received previously with the received same print data Sb (it is for determining whether to be that a duration is computable using the memorized operation auxiliary value.). As the approach of this judgment, while attaching an identification number and transmitting to print data Sb in a computer 1 at step S2, in a data converter 6, it can judge by attaching the same identification number and transmitting in transmission of step S15 or step S2 of the 2nd henceforth, for example.

[0138] Furthermore, as the approach of other judgments, when a data converter 6 receives print data Sb at the time of preview processing, an identification number is given to the received print data Sb concerned (step S3 reference). While answering a computer 1 in this, when print data Sb are transmitted from a computer 1 in step S15 or step S2 of the 2nd henceforth, In a data converter 6, it can judge by attaching the above-mentioned identification number transmitted from the data converter 6, and transmitting.

[0139] When print data Sb are received in step S3 as other approaches, furthermore, the amount of data concerned of print data Sb which received, the value (being the so-called --) acquired based on the value which regarded the data concerned as enumeration of the numeric value of a fixed digit count, and added all of those numeric values When a checksum is memorized and print data Sb are again received in step S16, the amount of data of print data Sb and the above-mentioned checksum concerned which received, and the amount of data and the checksum which were memorized can also be compared and judged.

[0140] Furthermore, in addition to the judgment using the above-mentioned amount of data and a checksum, the data located in two or more addresses in print data Sb defined beforehand are memorized with the amount of data and a checksum again, and it can also be judged as compared with the print data received again.

[0141] Even if the preview processing and printing processing to the same print data are not continuously required of a data converter 6 by matching information required in order to judge these same print data, and the above-mentioned operation auxiliary value, and memorizing more than one, quick time amount calculation using an operation auxiliary value can be performed.

[0142] (IV) The 2nd operation gestalt of the preview processing performed in the 2nd operation gestalt, next network system W of preview processing and printing processing and printing processing is explained using the flow chart shown in drawing 5 . In the above-mentioned 1st operation gestalt, although the operation gestalt at the time of using the data converter 6 of a configuration of not saving this to printing processing initiation was explained even if print data Sb were inputted, a \*\*\*\* 2 operation gestalt is an operation gestalt at the time of using the data converter 6 of a configuration of saving the inputted print data Sb to printing processing initiation.

[0143] Moreover, in the following explanation, since an understanding is easy, while explaining preview processing and printing processing in which the printer 7 was used for the computer 1 and the data converter 6 list, processing of processing of a computer 1, a data converter 6, and a printer 7 is explained in parallel.

[0144] Furthermore, in the flow chart shown in drawing 5 , about the same processing as the flow chart shown in drawing 4 , the same step number is attached and explanation of details is omitted.

[0145] In preview processing and printing processing of the 2nd operation gestalt, as shown in drawing 5 , steps S1 and S2 in the 1st operation gestalt are performed first, and the print data Sb received in the data converter 6 are temporarily memorized in RAM24 (step S26).

[0146] Next, about the already memorized print data of the others containing the print data Sb concerned memorized, Liszt (chart) of all the print data Sb concerned memorized gives an identification number, and is generated to each print data Sb, and the Liszt concerned is transmitted to a computer 1 (step S27). And in the computer 1, transmitted Liszt is memorized temporarily (step S29).

[0147] Next, the directions data (directive command) as a demand signal Sr of the purport which performs preview processing from a computer 1 With the above-mentioned identification number (step S27 reference) which shows the print data Sb (either of the print data Sb contained in Liszt who acquired in step S29) set as the object of preview processing Transmission performs step S4 [ in / for this / the 1st operation gestalt ] thru/or S14 after reception (step S28) in a data converter 6 (step S30).

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[0148] Next Print data Sb (in step S29) with which the directions data (directive command) as a demand signal Sr in which it is shown whether a printout is actually started serve as a candidate for printing from a computer 1 If transmitted with the above-mentioned identification number (step S27 reference) which shows either of the print data Sb contained in Liszt who acquired (step S31) Based on the identification number contained in it after reception (step S32) in the data converter 6 in this, step S17 in the 1st operation gestalt thru/or processing of S22 are performed, and printing processing of print data Sb is performed.

[0149] Even when the data converter 6 of a configuration of saving the inputted print data Sb to printing processing initiation is used according to preview processing and printing processing of the 2nd operation gestalt in which it explained above, the same effectiveness as the above-mentioned 1st operation gestalt is acquired.

[0150] Here, although based on the above-mentioned identification number as the discernment approach of the print data Sb in step S32 of the 2nd operation gestalt, as long as others and RAM24 are the formats that the storage location of print data Sb can be pinpointed by address information, print data Sb may be specified using the address information concerned. Moreover, as long as RAM24 can specify print data Sb by the file name, print data Sb may be specified using the file name concerned.

[0151] In addition, above-mentioned preview processing and printing processing of each operation gestalt can completely be similarly performed, even if it uses other computers 2 thru/ or 4 and a data converter 6.

[0152] Furthermore, when applying the processing shown in drawing 4 or drawing 5 over the above-mentioned whole network-system W, for example, when performing preview processing of the print data Sb generated by computer 1 using the display 15 of a computer 2, processing at least of the above-mentioned step S9, S12, or S15 (S31) and S19 is performed in the computer 2 which performs the preview processing concerned. At this time, a computer 2 will be answered in an indicative data Sa in a data converter 6.

[0153] Furthermore, although the case where a duration was calculated was explained performing preview processing as prior processing before actually performing printing processing in each above-mentioned operation gestalt again Temporary printing (trial printing) to print data Sb is performed as prior processing before actually performing printing processing, and a duration is calculated and you may make it memorize an operation auxiliary value in that case besides be fastidious.

[0154] Also in this case, it will be based on the operation auxiliary value which shows the processing time computed by the observation at the time of temporary printing, the processing time at the time of actual printing will be generated, and the processing time can be computed more correctly.

[0155] Moreover, in each above-mentioned operation gestalt, although the data converter 6 and the printer 7 were explained as separate independent equipment, it is also possible to give the function as the above-mentioned data converter to the printer itself besides this. In this case, the program which shows actuation concerning this invention can be built in in a printer as the so-called RIP (Raster Image Processer) program for developing the print data Sb from a computer to bit map data.

[0156] Furthermore, make the program concerning the actuation (refer to drawing 4 ) concerning an above-mentioned operation gestalt record on the flexible disk as a record medium etc., it is made to memorize in the hard disk drive unit which constitutes the above RAM in a computer if needed, and you may make it use.

[0157] Furthermore, this invention can also be applied again, when displaying, after checking beforehand the image displayed on the display not only at the preview in a printout but at a television conference using a printer.

[0158]

[Effect of the Invention] Since it generates and notifies of the real processing time using the hour entry memorized at the time of actual printing while memorizing the hour entry which computes the required processing time before actual printing, and shows the computed processing time concerned according to invention according to claim 1 in case printing processing is carried out as explained above, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0159] Therefore, printing of the print data at the time of actual printing can be performed quickly.

[0160] Since according to invention according to claim 2 in addition to an effect of the invention according to claim 1 a storage means memorizes the processing time itself as a hour entry, reads the processing time concerned and outputs to a notice means as the real processing time, the real processing time can be more quickly recognized by memorizing the printing time amount itself at the time of actual printing.

[0161] While memorizing [ according to invention according to claim 3 ] a change hour entry and a fixed hour entry in addition to an effect of the invention according to claim 1 Since the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized,

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even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0162] While printing processing includes [ according to invention according to claim 4 ] image display processing and temporary printing processing in any 1 term of claims 1-3 in addition to the effect of the invention of a publication Since a calculation means computes the processing time by actually performing among image display processing and temporary printing processing before printing at least one side It will be based on the hour entry which shows the processing time computed by the observation, the real processing time at the time of actual printing will be generated, and the real processing time can be generated more correctly.

[0163] According to invention according to claim 5, even if it is the printing system which shares an inverter and an airline printer with two or more data generation equipments in any 1 term of claims 1-4 in addition to the effect of the invention of a publication, in data generation equipment, the real processing time can be quickly recognized at the time of actual printing.

[0164] Since it generates and notifies of the real processing time using the hour entry memorized at the time of actual printing while memorizing the hour entry which computes the required processing time before actual printing, and shows the computed processing time concerned according to invention according to claim 6, in case printing processing is carried out, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0165] Therefore, printing of the print data at the time of actual printing can be performed quickly.

[0166] Since according to invention according to claim 7 in addition to an effect of the invention according to claim 6 a storage means memorizes the processing time itself as a hour entry, reads the processing time concerned and outputs to a notice means as the real processing time, the real processing time can be more quickly recognized by memorizing the printing time amount itself at the time of actual printing.

[0167] While memorizing [ according to invention according to claim 8 ] a change hour entry and a fixed hour entry in addition to an effect of the invention according to claim 6 Since the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0168] While printing processing includes [ according to invention according to claim 9 ] image display processing and temporary printing processing in any 1 term of claims 6-8 in addition to the effect of the invention of a publication Since a calculation means computes the processing time by actually performing among image display processing and temporary printing processing before printing at least one side It will be based on the hour entry which shows the processing time computed by the observation, the real processing time at the time of actual printing will be generated, and the real processing time can be generated more correctly.

[0169] According to invention according to claim 10, even if it is the printing system which shares an inverter and an airline printer with two or more data generation equipments in any 1 term of claims 6-9 in addition to the effect of the invention of a publication, in data generation equipment, the real processing time can be quickly recognized at the time of actual printing.

[0170] Since it generates and notifies of the real processing time using the hour entry memorized at the time of actual printing while memorizing the hour entry which computes the required processing time before actual printing, and shows the computed processing time concerned according to invention according to claim 11, in case printing processing is carried out, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0171] Therefore, printing of the print data at the time of actual printing can be performed quickly.

[0172] Since according to invention according to claim 12 in addition to an effect of the invention according to claim 11 a storage means memorizes the processing time itself as a hour entry, reads the processing time concerned and outputs to a notice means as the real processing time, the real processing time can be more quickly recognized by memorizing the printing time amount itself at the time of actual printing.

[0173] While memorizing [ according to invention according to claim 13 ] a change hour entry and a fixed hour entry in addition to an effect of the invention according to claim 11 Since the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0174] While printing processing includes [ according to invention according to claim 14 ] image display processing

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and temporary printing processing in any 1 term of claims 11-13 in addition to the effect of the invention of a publication Since a calculation means computes the processing time by actually performing among image display processing and temporary printing processing before printing at least one side It will be based on the hour entry which shows the processing time computed by the observation, the real processing time at the time of actual printing will be generated, and the real processing time can be generated more correctly.

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TECHNICAL FIELD

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[Field of the Invention] This invention belongs to the technical field of a printing system equipped with the configuration of which presumes the processing time which printing takes and a user is notified before actual printing in the printing system which prints print data.

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PRIOR ART

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[Description of the Prior Art] In case print data, such as a document or an image, are printed conventionally, the processing of which carries out the presumed operation of the duration which the printing concerned takes, and a user is notified is known. When sharing one set of a printer by two or more computers, or in case a huge quantity of print data are printed, this notice processing can predict a printing finish time beforehand, and is processing very useful at the point that a user can perform other business etc. in the meantime.

[0003] What considers as the approach of carrying out the presumed operation of this processing time, and is known conventionally, The printing processing time of print data (text data) For example, the number of alphabetic characters, How to compute in consideration of the existence of a special symbol and an underline, and the existence of a ruled line (refer to JP,64-38824,A), How to compute the total value of the value with reference to the table on which the processing time corresponding to each command which analyzed the command in print data and was analyzed further is described (refer to JP,2-57367,A or JP,4-146165,A), Or print data are analyzed and there is a method (refer to JP,3-164927,A) of finding the processing time proportional to the number of pages contained in it etc.

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## EFFECT OF THE INVENTION

[Effect of the Invention] Since it generates and notifies of the real processing time using the hour entry memorized at the time of actual printing while memorizing the hour entry which computes the required processing time before actual printing, and shows the computed processing time concerned according to invention according to claim 1 in case printing processing is carried out as explained above, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0159] Therefore, printing of the print data at the time of actual printing can be performed quickly.

[0160] Since according to invention according to claim 2 in addition to an effect of the invention according to claim 1 a storage means memorizes the processing time itself as a hour entry, reads the processing time concerned and outputs to a notice means as the real processing time, the real processing time can be more quickly recognized by memorizing the printing time amount itself at the time of actual printing.

[0161] While memorizing [ according to invention according to claim 3 ] a change hour entry and a fixed hour entry in addition to an effect of the invention according to claim 1, Since the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0162] While printing processing includes [ according to invention according to claim 4 ] image display processing and temporary printing processing in any 1 term of claims 1-3 in addition to the effect of the invention of a publication, Since a calculation means computes the processing time by actually performing among image display processing and temporary printing processing before printing at least one side, it will be based on the hour entry which shows the processing time computed by the observation, the real processing time at the time of actual printing will be generated, and it can generate the real processing time more correctly.

[0163] According to invention according to claim 5, even if it is the printing system which shares an inverter and an airline printer with two or more data generation equipments in any 1 term of claims 1-4 in addition to the effect of the invention of a publication, in data generation equipment, the real processing time can be quickly recognized at the time of actual printing.

[0164] Since it generates and notifies of the real processing time using the hour entry memorized at the time of actual printing while memorizing the hour entry which computes the required processing time before actual printing, and shows the computed processing time concerned according to invention according to claim 6, in case printing processing is carried out, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0165] Therefore, printing of the print data at the time of actual printing can be performed quickly.

[0166] Since according to invention according to claim 7 in addition to an effect of the invention according to claim 6 a storage means memorizes the processing time itself as a hour entry, reads the processing time concerned and outputs to a notice means as the real processing time, the real processing time can be more quickly recognized by memorizing the printing time amount itself at the time of actual printing.

[0167] While memorizing [ according to invention according to claim 8 ] a change hour entry and a fixed hour entry in addition to an effect of the invention according to claim 6, Since the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0168] While printing processing includes [ according to invention according to claim 9 ] image display processing and temporary printing processing in any 1 term of claims 6-8 in addition to the effect of the invention of a publication,

Since a calculation means computes the processing time by actually performing among image display processing and temporary printing processing before printing at least one side, it will be based on the hour entry which shows the processing time computed by the observation, the real processing time at the time of actual printing will be generated, and it can generate the real processing time more correctly.

[0169] According to invention according to claim 10, even if it is the printing system which shares an inverter and an airline printer with two or more data generation equipments in any 1 term of claims 6-9 in addition to the effect of the invention of a publication, in data generation equipment, the real processing time can be quickly recognized at the time of actual printing.

[0170] Since it generates and notifies of the real processing time using the hour entry memorized at the time of actual printing while memorizing the hour entry which computes the required processing time before actual printing, and shows the computed processing time concerned according to invention according to claim 11, in case printing processing is carried out, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0171] Therefore, printing of the print data at the time of actual printing can be performed quickly.

[0172] Since according to invention according to claim 12 in addition to an effect of the invention according to claim 11 a storage means memorizes the processing time itself as a hour entry, reads the processing time concerned and outputs to a notice means as the real processing time, the real processing time can be more quickly recognized by memorizing the printing time amount itself at the time of actual printing.

[0173] While memorizing [ according to invention according to claim 13 ] a change hour entry and a fixed hour entry in addition to an effect of the invention according to claim 11, Since the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0174] While printing processing includes [ according to invention according to claim 14 ] image display processing and temporary printing processing in any 1 term of claims 11-13 in addition to the effect of the invention of a publication, Since a calculation means computes the processing time by actually performing among image display processing and temporary printing processing before printing at least one side, it will be based on the hour entry which shows the processing time computed by the observation, the real processing time at the time of actual printing will be generated, and it can generate the real processing time more correctly.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, in the conventional approach including the describing [ above ] all directions method, after the duration is directed to printing initiation for every time of actual printing of print data, it is common to compute by actually computing the processing time of all processings performed by a printing result being obtained, respectively, and totaling them.

[0005] Therefore, print data were a huge amount, or when it was print data to be complicatedly, the presumed data processing of the duration concerned itself took time amount, and there was a trouble that it will be overdue for original printing processing to be unable to begin easily and to obtain a printing result final as a result.

[0006] Since a presumed operation is similarly performed in the original printout processing concerned about this trouble even when it is going to perform an original printout anew after, performing preview processing which checks the outline of a printing result by a screen display etc., and temporary printing (trial printing) of print data for example, the same trouble will exist.

[0007] Then, this invention was made in view of each above-mentioned trouble, and the technical problem is in offering the record medium which recorded the printing control program on the printing system which the presumed operation of the processing time is performed quickly and can perform original printout processing quickly, and the printing approach list.

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3. In the drawings, any words are not translated.

## MEANS

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, invention according to claim 1 Calculation means, such as CPU which computes the processing time required in case printing processing of said print data is carried out before actual printing in the printing system which prints the print data which should be printed, In storage means to memorize the hour entry which shows said computed processing time, such as RAM, and the time of said actual printing It has generation means, such as CPU which generates the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and notice means, such as CPU which notifies of said generated real processing time.

[0009] According to the operation of invention according to claim 1, a calculation means computes the required processing time before actual printing, in case printing processing of the print data is carried out.

[0010] And a storage means memorizes the hour entry which shows the computed processing time.

[0011] Then, a generation means generates the real processing time using the hour entry memorized at the time of actual printing.

[0012] Finally, a notice means notifies of the generated real processing time.

[0013] Therefore, the real processing time required for printing can be quickly recognized at the time of actual printing.

[0014] In order to solve the above-mentioned technical problem, while, as for said storage means, invention according to claim 2 memorizes said processing time itself as said hour entry in a printing system according to claim 1, said generation means reads the processing time concerned from said storage means, and it is constituted so that it may output to said notice means as said real processing time.

[0015] According to the operation of invention according to claim 2, in addition to an operation of invention according to claim 1, a storage means memorizes the processing time itself as a hour entry.

[0016] And a generation means reads the processing time concerned from a storage means, and outputs it to a notice means as the real processing time.

[0017] Therefore, since the processing time itself is memorized, the real processing time can be more quickly recognized at the time of actual printing.

[0018] In order to solve the above-mentioned technical problem, invention according to claim 3 In a printing system according to claim 1 said storage means The change hour entry which shows the change time amount which is said partial processing time which changes among the partial processing times which constitute said processing time depending on the printing mode of said print data, While memorizing the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing, said generation means It is constituted so that said real processing time may be generated based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[0019] While a storage means memorizes [ according to the operation of invention according to claim 3 ] a change hour entry and a fixed hour entry in addition to an operation of invention according to claim 1, a generation means generates the real processing time based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized.

[0020] Therefore, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0021] In order to solve the above-mentioned technical problem, invention according to claim 4 It is a printing system given in any 1 term of claims 1-3. Said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily, said calculation means By actually performing at least one side before said printing among

said image display processing and said temporary printing processing, it is constituted so that said processing time may be computed.

[0022] According to the operation of invention according to claim 4, while printing processing includes an image display process and temporary printing processing in any 1 term of claims 1-3 in addition to an operation of invention of a publication, a calculation means computes the processing time by actually performing among an image display process and temporary printing processing, before printing at least one side.

[0023] Therefore, since the processing time is generated based on the hour entry which shows the processing time computed by the observation, the real processing time can be generated more correctly.

[0024] In order to solve the above-mentioned technical problem, invention according to claim 5 Data generation equipments, such as a computer which is a printing system given in any 1 term of claims 1-4, and generates said print data, Inverters which change said generated print data into the conversion print data used in case [ said ] it prints, such as a data converter, While said calculation means, said storage means, and said generation means are included in said inverter including airline printers, such as a printer which carries out the printout of said conversion print data, it is constituted as said notice means is included in said data generation equipment.

[0025] According to the operation of invention according to claim 5, in addition to an operation of invention of a publication, data generation equipment generates print data in any 1 term of claims 1-4.

[0026] And an inverter changes the generated print data into conversion print data.

[0027] Furthermore, an airline printer carries out the printout of the conversion print data.

[0028] While the calculation means, the storage means, and the generation means are included in the inverter at this time, the notice means is included in data generation equipment.

[0029] Therefore, even if it is the printing system which shares an inverter and an airline printer with two or more data generation equipments, in data generation equipment, the real processing time can be quickly recognized at the time of actual printing.

[0030] In order to solve the above-mentioned technical problem, invention according to claim 6 The calculation process which is the printing approach in the printing system which prints the print data which should be printed, and computes the required processing time before actual printing in case printing processing of said print data is carried out, In the storage process which memorizes the hour entry which shows said computed processing time, and the time of said actual printing It has the generation process which generates the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and the notice process which notifies of said generated real processing time.

[0031] According to the operation of invention according to claim 6, in a calculation process, in case printing processing of the print data is carried out, the required processing time is computed before actual printing.

[0032] And in a storage process, the hour entry which shows the computed processing time is memorized.

[0033] Then, in a generation process, the real processing time is generated using the hour entry memorized at the time of actual printing.

[0034] Finally, in a notice process, it notifies of the generated real processing time.

[0035] Therefore, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

[0036] In said storage process, in said generation process, invention according to claim 7 reads the processing time concerned from said storage means, and in order to solve the above-mentioned technical problem, while memorizing said processing time itself as said hour entry, it is constituted in the printing approach according to claim 6 so that it may output to said notice means as said real processing time.

[0037] According to the operation of invention according to claim 7, in addition to an operation of invention according to claim 6, in a storage process, the processing time itself is memorized as a hour entry.

[0038] And in a generation process, the processing time concerned is read from a storage means, and it outputs to a notice means as the real processing time.

[0039] Therefore, since the processing time itself is memorized, the real processing time can be more quickly recognized at the time of actual printing.

[0040] In order to solve the above-mentioned technical problem, invention according to claim 8 The change hour entry which shows the change time amount which is said partial processing time which changes in said storage process in the printing approach according to claim 6 among the partial processing times which constitute said processing time depending on the printing mode of said print data, While memorizing the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing It sets at said generation

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process, and it is constituted so that said real processing time may be generated based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[0041] According to the operation of invention according to claim 8, while memorizing a change hour entry and a fixed hour entry in a storage process in addition to an operation of invention according to claim 6, in a generation process, the real processing time is generated based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized.

[0042] Therefore, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0043] In order to solve the above-mentioned technical problem, invention according to claim 9 It is the printing approach given in any 1 term of claims 6-8. Said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily In said calculation process, by actually performing at least one side before said printing among said image display processing and said temporary printing processing, it is constituted so that said processing time may be computed.

[0044] According to the operation of invention according to claim 9, while printing processing includes an image display process and temporary printing processing in addition to an operation of invention given in any 1 term of claims 6-8, the processing time is computed by actually performing among an image display process and temporary printing processing, in a calculation process, before printing at least one side.

[0045] Therefore, since the processing time is generated based on the hour entry which shows the processing time computed by the observation, the real processing time can be generated more correctly.

[0046] In order to solve the above-mentioned technical problem, invention according to claim 10 It is the printing approach given in any 1 term of claims 6-9. Said printing system The data generation equipment which generates said print data, and the inverter which changes said generated print data into the conversion print data used in case [ said ] it prints, While said calculation process, said storage process, and said generation process are performed in said inverter including the airline printer which carries out the printout of said conversion print data, said notice process is constituted so that it may perform in said data generation equipment.

[0047] According to the operation of invention according to claim 10, in addition to an operation of invention of a publication, in data generation equipment, generation of print data is carried out to any 1 term of claims 6-9, and the print data generated in the inverter are changed into conversion print data. And the printout of the conversion print data is carried out in an airline printer.

[0048] While a calculation process, a storage process, and a generation process are performed in an inverter at this time, a notice process is performed in data generation equipment.

[0049] Therefore, also in the printing system which shares an inverter and an airline printer with two or more data generation equipments, the real processing time can be quickly recognized in data generation equipment at the time of actual printing.

[0050] In order to solve the above-mentioned technical problem, invention according to claim 11 The computer contained in the printing system which prints the print data which should be printed In the time of a calculation means to compute the processing time required in case printing processing of said print data is carried out before actual printing, a storage control means to make a storage means memorize the hour entry which shows said computed processing time, and said actual printing The printing control program for considering as a generation means to generate the real processing time which is the time amount which said actual printing processing takes using said hour entry memorized, and a notice means to notify of said generated real processing time, and making it function is recorded and constituted.

[0051] According to the operation of invention according to claim 11, the computer which functions as a calculation means computes the required processing time before actual printing, in case printing processing of the print data is carried out.

[0052] And the computer which functions as a storage control means makes a storage means memorize the hour entry which shows the computed processing time.

[0053] Then, the computer which functions as a generation means generates the real processing time using the hour entry memorized at the time of actual printing.

[0054] Finally, the computer which functions as a notice means notifies of the generated real processing time.

[0055] Therefore, the real processing time required for printing processing can be quickly recognized at the time of actual printing.

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[0056] In order to solve the above-mentioned technical problem, invention according to claim 12 In the record medium with which the printing control program according to claim 11 was recorded, the computer which functions as said storage control means While making said storage means memorize by making said processing time itself into said hour entry, the computer which functions as said generation means reads the processing time concerned from said storage means, and it is constituted so that it may output to the computer which functions as said notice means as said real processing time.

[0057] According to the operation of invention according to claim 12, a storage means is made to memorize the computer which functions as a storage control means by making the processing time itself into a hour entry in addition to an operation of invention according to claim 11.

[0058] And the computer which functions as a generation means reads the processing time concerned from a storage means, and outputs it to the computer which functions as a notice means as the real processing time.

[0059] Therefore, since the processing time itself is memorized, the real processing time can be more quickly recognized at the time of actual printing.

[0060] In order to solve the above-mentioned technical problem, invention according to claim 13 In the record medium with which the printing control program according to claim 11 was recorded, the computer which functions as said storage control means The change hour entry which shows the change time amount which is said partial processing time which changes among the partial processing times which constitute said processing time depending on the printing mode of said print data, While making said storage means memorize the fixed hour entry which shows fixed time amount which is said fixed partial processing time corresponding to said printing processing, the computer which functions as said generation means It is constituted so that said real processing time may be generated based on said printing mode at the time of said actual printing in said change hour entry and fixed hour entry list which are memorized.

[0061] While the computer which functions as a storage control means memorizes [ according to the operation of invention according to claim 13 ] a change hour entry and a fixed hour entry in addition to an operation of invention according to claim 11, the computer which functions as a generation means generates the real processing time based on the printing mode at the time of actual printing in the change hour entry and fixed hour entry list which are memorized.

[0062] Therefore, even when the time of prior processing-time calculation differs from a printing mode, the real processing time can be quickly recognized at the time of actual printing.

[0063] In order to solve the above-mentioned technical problem, invention according to claim 14 In the record medium with which the printing control program of a publication was recorded on any 1 term of claims 11-13 said printing processing While including the image display process which displays the printing mode of said print data before said printing, and the temporary printing processing which prints the print data concerned temporarily, the computer which functions as said calculation means By actually performing at least one side before said printing among said image display processing and said temporary printing processing, it is constituted so that said processing time may be computed.

[0064] While printing processing includes [ according to the operation of invention according to claim 14 ] image display processing and temporary printing processing in any 1 term of claims 11-13 in addition to an operation of invention of a publication, the computer which functions as a calculation means computes the processing time by actually performing among image display processing and temporary printing processing, before printing at least one side.

[0065] Therefore, since the processing time is generated based on the hour entry which shows the processing time computed by the observation, the real processing time can be generated more correctly.

[0066]

[Embodiment of the Invention] Next, the gestalt of the suitable operation for this invention is explained based on a drawing. In addition, the gestalt of the operation explained below is a gestalt of operation when two or more computers as data generation equipment apply this invention to the output control in the case of carrying out joint use of the printer concerned by each computer in the network system connected to the printer as an output unit through the data converters (specifically for example, data server etc.) of 1 as an inverter.

[0067] (I) Drawing 1 is used and explained about the configuration of the network system of an operation gestalt at the beginning of a whole configuration.

[0068] As shown in drawing 1, the network system W of an operation gestalt is constituted by four computers 1 thru/or 4, the data converter 6, the change-over machine 5 that connects a computer 1 thru/or each 4 and data converter 6, and the printer 7.

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[0069] In this configuration, each computer 1 thru/ or 4 generate the print data which should be carried out a printout in a printer 7 using the application software with which each is equipped, and outputs them to the change-over machine 5. Here, as the above-mentioned output data, it is created by the Page Description Language of common knowledge, such as "PostScript" etc. of an Adobe company, for example. Furthermore, in parallel to this, each computer 1 thru/ or 4 perform the below-mentioned preview processing.

[0070] Here, the processing which displays the mode (namely, modes, such as a layout of a font, a graphic size, and the whole and color arrangement) of the printout data (the so-called bit map data) with which the printout of the preview processing is carried out before the printout in the printer 7 using the above-mentioned print data corresponding to the above-mentioned print data to the below-mentioned display which was included in each computer 1 thru/ or 4, or was prepared apart from the computer concerned is said.

[0071] The change-over machine 5 is equipped with the buffer section which memorizes temporarily each computer 1 thru/ or the print data from 4, and outputs these print data to a data converter 6 in time sharing for every computer.

[0072] Furthermore, the change-over machine 5 distributes the below-mentioned indicative data outputted from a data converter 6 to each computer.

[0073] On the other hand, it develops to the printout data (printing bit map data are called hereafter.) for carrying out a printout in a printer 7 using the translation data with which the data converter 6 concerned holds the print data transmitted through the change-over machine 5 from each computer 1 thru/ or 4, and a data converter 6 is outputted to a printer 7. Furthermore, a data converter 6 performs below-mentioned preview processing and printing processing.

[0074] And a printer 7 performs a corresponding printout based on the outputted printing bit map data.

[0075] (II) A details configuration, next the details configuration of each configuration member which constitutes the above-mentioned network system W are explained using drawing 2 and drawing 3.

[0076] Introduction, a computer 1 or the configuration of 4, and actuation are explained using drawing 2 (a). In addition, since each computer 1 thru/ or 4 perform the respectively same configuration and actuation, it is represented with the following explanation and explains a computer 1 by it.

[0077] As shown in drawing 2 (a), a computer 1 CPU10 as a notice means to perform the below-mentioned preview processing by executing each instruction which reads the program memorized by ROM13 and is included in it, The input section 11 which consists of a keyboard, a mouse, etc., and the network connection section 12, ROM13 as a record medium (ReadOnly Memory), It is constituted by the display 15 as a notice means which consists of RAM (Random Access Memory)14, CRT (Cathode Ray Tube), or liquid crystal, and the bus 16 which connects each configuration member in a computer 1.

[0078] In the above-mentioned configuration, it connects with the change-over machine 5, and the network connection section 12 performs the so-called interface actuation to the data inputted into the data and the computer 1 which are outputted from a computer 1.

[0079] On the other hand, the input section 11 outputs it to CPU10 grade through a bus 16, when data required for the processing in a computer 1 are inputted.

[0080] ROM13 is read-only memory which has memorized the program for control of the computer 1 whole (the program corresponding to the flow chart for the below-mentioned preview processing is included.), reads a program required of predetermined timing, and outputs it to a bus 16.

[0081] Moreover, in fact, RAM14 is constituted by stores, such as a hard disk drive unit, etc., memorizes temporarily data required for the processing in CPU10 etc., and outputs them to a bus 16 if needed.

[0082] Furthermore, a display 15 displays the image corresponding to the below-mentioned indicative data Sa, and displays the further below-mentioned processing time while it performs a display required for the processing in CPU10.

[0083] Finally, CPU10 controls each configuration member which constitutes a computer 1 while it processes document preparation, an image processing, etc. which correspond using the application program memorized by RAM14 and generates print data Sb.

[0084] In addition, about actuation of the computer 1 in the preview processing concerning this invention, the back explains it collectively.

[0085] Next, the configuration and actuation of a printer 7 are explained using drawing 2 (b).

[0086] The printer 7 is constituted by CPU17, the network connection section 18, ROM19 and RAM20, the output engine 21, and bus 21a as shown in drawing 2 (b).

[0087] In this configuration, it connects with the data converter 6 and the network connection section 18 performs interface actuation to the printing bit map data (data of a bit map format) which should be carried out a printout in the

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printer 7 concerned inputted into a printer 7.

[0088] On the other hand, CPU17 controls each configuration member which constitutes a printer 7, and performs the printout of the printing bit map data concerned.

[0089] Moreover, ROM19 is memory which has memorized the program for control of the printer 7 whole, reads a program required of predetermined timing, and outputs it to bus 21a.

[0090] Furthermore, RAM20 memorizes temporarily data required for the processing in CPU17 etc., and outputs them to a bus 21 if needed.

[0091] Finally, the output engine 21 is equipped with the printing sections, such as an ink jet method or an electrophotography method, and performs printout processing of actual printing bit map data under control of CPU16.

[0092] In addition, about actuation of the printer 7 in the preview processing and printing processing concerning this invention, the back explains it collectively.

[0093] Finally, drawing 3 is used and explained about the configuration and actuation of a data converter 6.

[0094] As shown in drawing 3, a data converter 6 Interfaces 22a and 22b, CPU23 as a calculation means to execute each instruction which reads the program memorized by ROM36 and is included in it, and to perform below-mentioned preview processing and printing processing, and a generation means, It is constituted by ROM36 as a record medium, RAM24 as a storage means, the bit map data generation section 25, the indicative-data generation section 26, the bus 27, and translation data ROM35.

[0095] Furthermore, the bit map data generation section 25 builds in the logic operation circuit which consists of CPU25a, ROM25b, and RAM25c, and the indicative-data generation section 26 builds in the logic operation circuit which consists of CPU26a, ROM26b, and RAM26c. Here, ROM25b has memorized the program for printing bit map data generation, and ROM26b has memorized the required program, in case CPU26a controls the indicative-data generation section 26.

[0096] In this configuration, interface 22a is outputted to an interface actuation deed and a bus 27 to each computer 1 thru/or the data from 4 through the change-over machine 5.

[0097] And CPU23 performs the output of each computer 1 through the change-over machine 5 of the below-mentioned indicative data Sa to the printer 7 of the generated below-mentioned printing bit map data outputted and generated thru/or 4 based on the below-mentioned demand signal Sr transmitted from each computer 1 thru/or 4 while controlling the data converter 6 whole.

[0098] Furthermore, by processing according to the below-mentioned flow chart, CPU23 computes the below-mentioned duration and transmits it to a computer 1 thru/or 4.

[0099] Next, RAM24 memorizes temporarily each computer 1 thru/or the print data Sb from 4, etc. inputted into the data converter 6, and outputs them to a bus 27 if needed. While memorizing temporarily the printing bit map data generated in the below-mentioned bit map data generation section 25 in parallel to this and outputting them to a printer 7 through a bus 27 under control of CPU23, RAM24 The indicative data Sa generated in the below-mentioned indicative-data generation section 26 is memorized temporarily, and it outputs to a printer 7 through a bus 27 under control of CPU23 a computer 1 thru/or 4.

[0100] ROM36 is read-only memory which has memorized the program for control of the data converter 6 whole (the program corresponding to the flow chart the below-mentioned preview processing and for printing processing is included.), reads a program required of predetermined timing, and outputs it to a bus 27.

[0101] Next, translation data ROM35 is ROM which has memorized the translation data for changing into printing bit map data the print data Sb (page descriptive data created by the Page Description Language) inputted from the computer 1, and the translation data concerned is shared in the bit map data generation section 25 and the indicative-data generation section 26. And these are read if needed including transformation-rule data 35b for interpreting each command code in print data Sb (Page Description Language) as concrete translation data, and drawing a graphic form etc., and font (font) data (outline data) 30a corresponding to the so-called character code contained in print data Sb.

[0102] On the other hand, the bit map data generation section 25 carries out expansion processing at the printing bit map data for carrying out the printout of each computer 1 thru/or the print data Sb from 4 in a printer 7, and is outputted to RAM23. That is, the command code and the above-mentioned character code in print data Sb are read, transformation-rule data 35b or font data 35a corresponding to each is further read from translation data ROM35, and the graphic form corresponding to command code and the font corresponding to a character code are made to memorize in a bit map format in the page memory in RAM23.

[0103] In addition, in expansion processing in the bit map data generation section 25, printing bit map data are generated for every page which actually carries out a printout using the above-mentioned translation data containing the

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font actually used for a printout in a printer 7.

[0104] And interface 22b performs interface processing to data required for the printing processing in the printers 7, such as generated printing bit map data, and outputs it to a printer 7.

[0105] Finally, corresponding to the demand signal Sr transmitted from each computer 1 thru/or 4, the indicative-data generation section 26 uses the above-mentioned translation data for the above-mentioned print-data Sb (print data Sb transmitted from each computer 1 thru/or 4) list, and it generates the indicative data Sa for the below-mentioned preview processing (namely, in order to display in a display 15 as a thing corresponding to printing bit map data). That is, the same processing as generation of the printing bit map data in the bit map data generation section 25 generates the indicative data Sa of a bit map format. Since the translation data from translation data ROM35 will be shared with the bit map data generation section 25 at this time, the indicative data Sa faithful to the actual printout in a printer 7 can be generated.

[0106] In addition, actuation of the data converter 6 in the preview processing and printing processing concerning this invention is explained collectively below.

[0107] (III) The 1st operation gestalt of the preview processing performed in the 1st operation gestalt, next network system W of preview processing and printing processing and printing processing is explained using the flow chart shown in drawing 4. In preview processing and printing processing of this operation gestalt, while the indicative data Sa faithful to the print data Sb (page descriptive data) which should be carried out a printout in a printer 7 is generated and being displayed on a display 15, the duration at the time of carrying out printing processing of the print data Sb is computed by CPU23, and is transmitted to a computer 1 thru/or 4.

[0108] Moreover, in the following explanation, since an understanding is easy, while explaining preview processing and printing processing in which the printer 7 was used for the computer 1 and the data converter 6 list, processing of processing of a computer 1, a data converter 6, and a printer 7 is explained in parallel.

[0109] Furthermore, the operation gestalt explained below is an operation gestalt at the time of using the data converter 6 of a configuration of not saving this to printing processing initiation, even if print data Sb are inputted.

[0110] As shown in drawing 4, in preview processing and printing processing of an operation gestalt, the print data Sb (for example, a document or an image etc. which should be carried out a printout) which should be first carried out a printout in a computer 1 using a printer 7 are generated (step S1).

[0111] And the generated print data Sb concerned are transmitted to a data converter 6 through the change-over machine 5 with the demand signal Sr of preview processing (step S2), and it is received in the data converter 6 concerned (step S3).

[0112] Next, it judges whether the operation auxiliary value used in order to calculate the duration at the time of carrying out printing processing of the received print data Sb is memorized by RAM24 (step S4). And when the operation auxiliary value concerned is memorized, the presumed operation of the duration is carried out using the operation auxiliary value concerned (step S4; yes) (step S5).

[0113] Here, when the above-mentioned duration is explained, it is desirable to consider as time amount (for the time amount for the preview processing concerned to also be included when the below-mentioned preview processing is performed.) until it finishes printing it as the duration concerned from generation initiation of the printing bit map data in the bit map data generation section 25. For this reason, it sets to calculation of the duration by step S5. The time amount which generation of printing bit map data takes While computing by analyzing the contents of print data, the time amount from the completion of generation of printing bit map data to printing termination It computes by adding the time amount proportional to the predetermined printing size corresponding to printing size currently beforehand computed by the experiment etc. to the rough value of a duration required by transmission to the printer 7 of printing bit map data.

[0114] Moreover, the thing based on the actual measurement at the time of generating the indicative data for preview processing in step S10 mentioned later is sufficient as the time amount which generation of printing bit map data takes. In this case, a duration can be found more quickly.

[0115] in addition -- in addition, it is good as a duration also as time amount to the transfer to the time amount to the completion of a transfer to the printer 7 of the printing bit map data from generation initiation of printing bit map data [ in / it carries out and / the bit map data generation section 25 ] good also as time amount from generation initiation of the printing bit map data in the bit map data generation section 25 to generation termination, or other storage.

[0116] Moreover, it is not from the printing bit map data generation initiation corresponding to the target print data, and suppose that it is the \*\* term of a duration from the time amount by which the print data concerned were sent to the data converter 6. In that case, a duration can compute the time amount which the business (for example, processing of

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the print data which had already been accumulated in the data converter 6, and which should be processed first) which should be processed ahead of the print data concerned takes by adding to an above-mentioned duration.

[0117] When the above-mentioned operation auxiliary value is explained, next, the operation auxiliary value concerned When the same print data Sb are inputted into a data converter 6 (for example, like this operation gestalt) When printing processing is performed about the same print data Sb as the print data Sb developed as an indicative data Sa for preview processing etc., It is the auxiliary value used in the case of the operation of the above-mentioned duration of the 2nd henceforth, and once it is computed about one print data Sb, it memorizes in RAM24 like the after-mentioned. [0118] and as a concrete value of the operation auxiliary value concerned May memorize the duration itself by which the operation was carried out [ above-mentioned ] as an operation auxiliary value corresponding to the print data Sb concerned, and Moreover, the value which **\*\***(ed) time amount which changes in proportion to printing size (a dilation ratio or reduction percentage) among time amount required for printing processing by the time amount at the time of printing unit size (namely, when printing with a dilation ratio 1.0 to print data Sb) (it is only hereafter referred to as "a".) It does not depend on printing size but is fixed time amount (it is only hereafter referred to as "b".). You may divide and memorize. In the case of the latter, the actually required duration is computable as  $\text{duration} = ax(\text{printing size}) + b$ .

[0119] Here, there is time amount for transmitting the time amount which the conversion to bit map data from vector data takes, the time amount for a bit map data transfer, or printing bit map data to a printer 7, for example as time amount which changes in proportion to the above-mentioned printing size etc.

[0120] Furthermore, it does not depend on printing size but there are time amount for syntax analysis of print data Sb, time amount for the coordinate transformation of vector data, etc. as fixed time amount.

[0121] If a duration calculates by the approach explained to **\*\*\*\*** (step S5) next, a computer 1 is answered in the duration information corresponding to the duration concerned (step S8), this is received in a computer 1, an indication etc. will be given to a display 15 and a user will be notified of the duration concerned (step S9).

[0122] On the other hand, when the operation auxiliary value is not memorized (i.e., when it is the print data Sb with which the received print data Sb are not preview-processed or printing processed till then), while carrying out the presumed operation of the above-mentioned duration by CPU23 in the judgment of step S4 based on (step S4; no), next the print data Sb concerned, the above-mentioned operation auxiliary value is computed (step S6). And it memorizes to RAM24 with the information for identifying the print data Sb which correspond the computed operation auxiliary value concerned (step S7).

[0123] In addition, by backing up by a cell etc. or carrying out fixation, the field in RAM24 which memorizes an operation auxiliary value is constituted so that the operation auxiliary value which has memorized the power source of a data converter 6 also as **\*\*** may not disappear.

[0124] After storage of an operation auxiliary value is completed, it shifts to the above-mentioned step S8 and S9.

[0125] Next, in a data converter 6, the indicative data Sa which the indicative-data generation section 26 should display on a display 15 using the print data Sb memorized by RAM24 and the translation data containing above-mentioned font data 35a, transformation-rule data 35b, etc. is generated under control of CPU23 (step S10). (expansion) At this time, the generated indicative data Sa is data of the bit map format of the almost same mode as the mode (modes, such as a layout of a font, a graphic size, and the whole, and color arrangement) when actually carrying out the printout of the print data Sb.

[0126] And the generated indicative data Sa is transmitted to a computer 1 (step S11).

[0127] next, the voice when carrying out the printout of the image Sb corresponding to the indicative data Sa concerned, i.e., the print data, in a printer 7, if the indicative data Sa concerned is received in a computer 1 (step S12) -- like -- about -- the image (image corresponding to an indicative data Sa) done one is displayed on a display 15, and a user checks this (step S13).

[0128] And if the input of the auxiliary information at the time of actually performing printing (for example, the above-mentioned printing size at the time of printing) is performed in a computer 1 (step S14) next, directions data (directive command) will be transmitted with print data Sb as a demand signal Sr which shows whether a printout is actually started from a computer 1 (step S15).

[0129] Next, if the directions data concerned and print data Sb are received in a data converter 6 (step S16), the above-mentioned duration corresponding to the received print data Sb will be calculated using an operation auxiliary value, and a corresponding (step S17) duration will be transmitted to a computer 1 (step S18). And the duration corresponding to the duration information transmitted in the computer 1 is displayed, and a user is notified (step S19).

[0130] Furthermore, in a data converter 6, in parallel to the above-mentioned step S19, the print data Sb memorized by

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RAM23 are developed to printing bit map data by the bit map data generation section 25, it outputs to a printer (step S20) 7, and printing is performed using the output engine 20 in a printer 7 (step S21).

[0131] And if a printout is completed, the print data Sb memorized by RAM23 will be deleted, and processing (step S22) will be ended.

[0132] In case printing processing is carried out, while memorizing the operation auxiliary value which computes the required processing time at the time of the preview processing before actual printing, and shows the computed processing time concerned according to preview processing and printing processing of an operation gestalt in which it explained above Since it generates and notifies of the processing time using the operation auxiliary value memorized at the time of actual printing, the processing time required for printing processing can be quickly recognized at the time of actual printing.

[0133] Moreover, when memorizing the processing time itself as an operation auxiliary value, the processing time can be more quickly recognized at the time of actual printing.

[0134] Furthermore, even when the time of processing-time calculation of beforehand when dividing a duration into the information corresponding to the time amount which changes corresponding to printing size, and the information corresponding to time amount fixed irrespective of printing size and memorizing it differs from actual printing size, the processing time can be quickly recognized at the time of actual printing.

[0135] Furthermore, since the processing time is computed by actually performing before printing preview processing again, it will be based on the operation auxiliary value which shows the processing time computed by the observation, the processing time at the time of actual printing will be generated, and the processing time can be computed more correctly.

[0136] In addition, the information displayed in the above-mentioned step S19 may be changed and displayed on the residual time to printing processing termination other than the duration itself mentioned above, and may compute and display schedule end time. Furthermore, the rate of elapsed time to the whole duration may be computed and displayed. Furthermore, conversion to such information to display is [ in / at the above-mentioned step S18 / step S19 ] possible.

[0137] Moreover, in step S3 and step S16, it is necessary to judge whether they are the print data as the print data Sb received previously with the received same print data Sb (it is for determining whether to be that a duration is computable using the memorized operation auxiliary value.). As the approach of this judgment, while attaching an identification number and transmitting to print data Sb in a computer 1 at step S2, in a data converter 6, it can judge by attaching the same identification number and transmitting in transmission of step S15 or step S2 of the 2nd henceforth, for example.

[0138] Furthermore, as the approach of other judgments, when a data converter 6 receives print data Sb at the time of preview processing, an identification number is given to the received print data Sb concerned (step S3 reference). While answering a computer 1 in this, when print data Sb are transmitted from a computer 1 in step S15 or step S2 of the 2nd henceforth, In a data converter 6, it can judge by attaching the above-mentioned identification number transmitted from the data converter 6, and transmitting.

[0139] When print data Sb are received in step S3 as other approaches, furthermore, the amount of data concerned of print data Sb which received, the value (being the so-called --) acquired based on the value which regarded the data concerned as enumeration of the numeric value of a fixed digit count, and added all of those numeric values When a checksum is memorized and print data Sb are again received in step S16, the amount of data of print data Sb and the above-mentioned checksum concerned which received, and the amount of data and the checksum which were memorized can also be compared and judged.

[0140] Furthermore, in addition to the judgment using the above-mentioned amount of data and a checksum, the data located in two or more addresses in print data Sb defined beforehand are memorized with the amount of data and a checksum again, and it can also be judged as compared with the print data received again.

[0141] Even if the preview processing and printing processing to the same print data are not continuously required of a data converter 6 by matching information required in order to judge these same print data, and the above-mentioned operation auxiliary value, and memorizing more than one, quick time amount calculation using an operation auxiliary value can be performed.

[0142] (IV) The 2nd operation gestalt of the preview processing performed in the 2nd operation gestalt, next network system W of preview processing and printing processing and printing processing is explained using the flow chart shown in drawing 5 . In the above-mentioned 1st operation gestalt, although the operation gestalt at the time of using the data converter 6 of a configuration of not saving this to printing processing initiation was explained even if print data Sb were inputted, a \*\*\*\* 2 operation gestalt is an operation gestalt at the time of using the data converter 6 of a

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configuration of saving the inputted print data Sb to printing processing initiation.

[0143] Moreover, in the following explanation, since an understanding is easy, while explaining preview processing and printing processing in which the printer 7 was used for the computer 1 and the data converter 6 list, processing of processing of a computer 1, a data converter 6, and a printer 7 is explained in parallel.

[0144] Furthermore, in the flow chart shown in drawing 5, about the same processing as the flow chart shown in drawing 4, the same step number is attached and explanation of details is omitted.

[0145] In preview processing and printing processing of the 2nd operation gestalt, as shown in drawing 5, steps S1 and S2 in the 1st operation gestalt are performed first, and the print data Sb received in the data converter 6 are temporarily memorized in RAM24 (step S26).

[0146] Next, about the already memorized print data of the others containing the print data Sb concerned memorized, Liszt (chart) of all the print data Sb concerned memorized gives an identification number, and is generated to each print data Sb, and the Liszt concerned is transmitted to a computer 1 (step S27). And in the computer 1, transmitted Liszt is memorized temporarily (step S29).

[0147] Next, the directions data (directive command) as a demand signal Sr of the purport which performs preview processing from a computer 1 With the above-mentioned identification number (step S27 reference) which shows the print data Sb (either of the print data Sb contained in Liszt who acquired in step S29) set as the object of preview processing Transmission performs step S4 [ in / for this / the 1st operation gestalt ] thru/or S14 after reception (step S28) in a data converter 6 (step S30).

[0148] Next Print data Sb (in step S29) with which the directions data (directive command) as a demand signal Sr in which it is shown whether a printout is actually started serve as a candidate for printing from a computer 1 If transmitted with the above-mentioned identification number (step S27 reference) which shows either of the print data Sb contained in Liszt who acquired (step S31) Based on the identification number contained in it after reception (step S32) in the data converter 6 in this, step S17 in the 1st operation gestalt thru/or processing of S22 are performed, and printing processing of print data Sb is performed.

[0149] Even when the data converter 6 of a configuration of saving the inputted print data Sb to printing processing initiation is used according to preview processing and printing processing of the 2nd operation gestalt in which it explained above, the same effectiveness as the above-mentioned 1st operation gestalt is acquired.

[0150] Here, although based on the above-mentioned identification number as the discernment approach of the print data Sb in step S32 of the 2nd operation gestalt, as long as others and RAM24 are the formats that the storage location of print data Sb can be pinpointed by address information, print data Sb may be specified using the address information concerned. Moreover, as long as RAM24 can specify print data Sb by the file name, print data Sb may be specified using the file name concerned.

[0151] In addition, above-mentioned preview processing and printing processing of each operation gestalt can completely be similarly performed, even if it uses other computers 2 thru/or 4 and a data converter 6.

[0152] Furthermore, when applying the processing shown in drawing 4 or drawing 5 over the above-mentioned whole network-system W, for example, when performing preview processing of the print data Sb generated by computer 1 using the display 15 of a computer 2, processing at least of the above-mentioned step S9, S12, or S15 (S31) and S19 is performed in the computer 2 which performs the preview processing concerned. At this time, a computer 2 will be answered in an indicative data Sa in a data converter 6.

[0153] Furthermore, although the case where a duration was calculated was explained performing preview processing as prior processing before actually performing printing processing in each above-mentioned operation gestalt again Temporary printing (trial printing) to print data Sb is performed as prior processing before actually performing printing processing, and a duration is calculated and you may make it memorize an operation auxiliary value in that case besides be fastidious.

[0154] Also in this case, it will be based on the operation auxiliary value which shows the processing time computed by the observation at the time of temporary printing, the processing time at the time of actual printing will be generated, and the processing time can be computed more correctly.

[0155] Moreover, in each above-mentioned operation gestalt, although the data converter 6 and the printer 7 were explained as separate independent equipment, it is also possible to give the function as the above-mentioned data converter to the printer itself besides this. In this case, the program which shows actuation concerning this invention can be built in in a printer as the so-called RIP (Raster Image Processor) program for developing the print data Sb from a computer to bit map data.

[0156] Furthermore, make the program concerning the actuation (refer to drawing 4) concerning an above-mentioned

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operation gestalt record on the flexible disk as a record medium etc., it is made to memorize in the hard disk drive unit which constitutes the above RAM in a computer if needed, and you may make it use.

[0157] Furthermore, this invention can also be applied again, when displaying, after checking beforehand the image displayed on the display not only at the preview in a printout but at a television conference using a printer.

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[Translation done.]

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## \* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the network system of an operation gestalt.

[Drawing 2] It is the block diagram showing the details configuration of a computer and a printer, and (a) is the block diagram showing the details configuration of a computer, and (b) is the block diagram showing the details configuration of a printer.

[Drawing 3] It is the block diagram showing the details configuration of a data converter.

[Drawing 4] It is the flow chart which shows actuation of preview processing of the 1st operation gestalt, and printing processing.

[Drawing 5] It is the flow chart which shows actuation of preview processing of the 2nd operation gestalt, and printing processing.

## [Description of Notations]

- 1, 2, 3, 4 -- Computer
- 5 -- Change-over machine
- 6 -- Data converter
- 7 -- Printer
- 10, 17, 23, 25a, 26 a--CPU
- 11 -- Input section
- 12 18 -- Network connection section
- 13, 19, 25b, 26b, 36 -- ROM
- 14, 20, 24, 25c, 26 c--RAM
- 15 -- Display
- 16, 21a, 27 -- Bus
- 21 -- Output engine
- 22a, 22b -- Interface
- 25 -- Bit map data generation section
- 26 -- Indicative-data generation section
- 35 -- Translation data ROM
- 35a -- Font data
- 35b -- Transformation-rule data
- W -- Network system
- Sa -- Indicative data
- Sb -- Output data
- Sr -- Demand signal

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[Translation done.]

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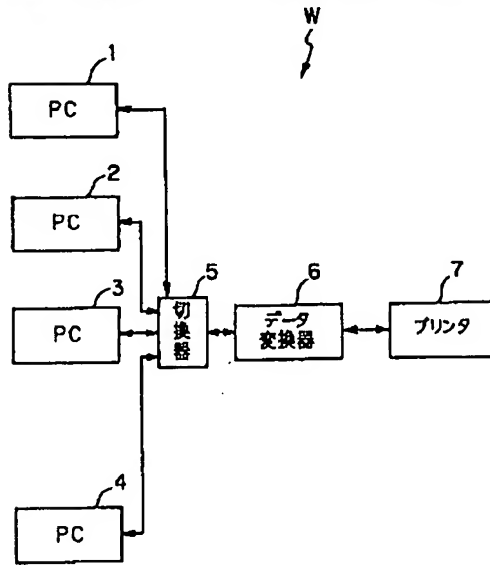
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DRAWINGS

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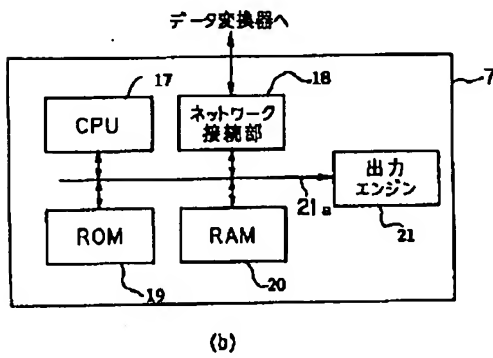
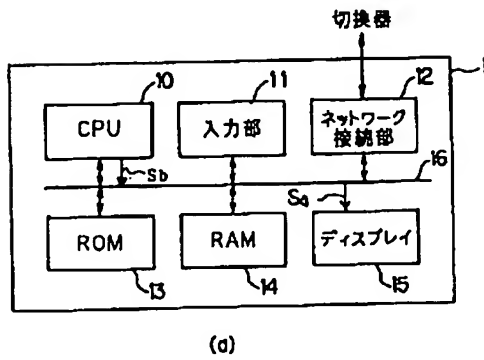
[Drawing 1]

実施形態のネットワークシステムの構成を示すブロック図



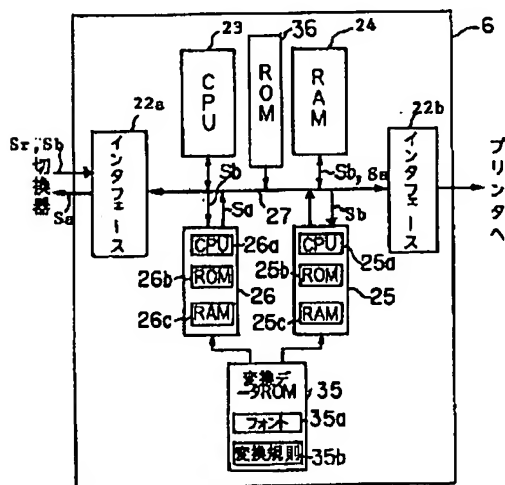
[Drawing 2]

コンピュータ及びプリンタの細部構成を示すブロック図



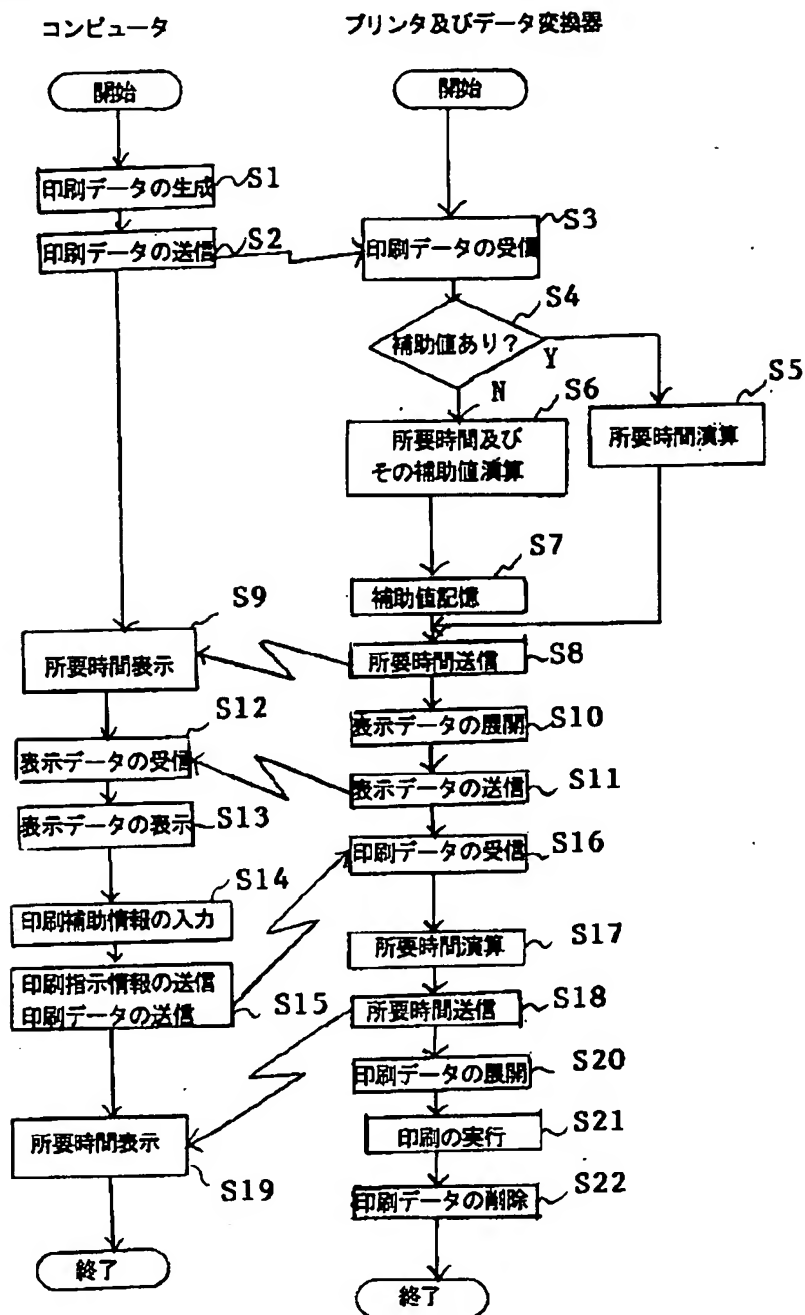
[Drawing 3]

データ変換器の細部構成を示すブロック図



[Drawing 4].

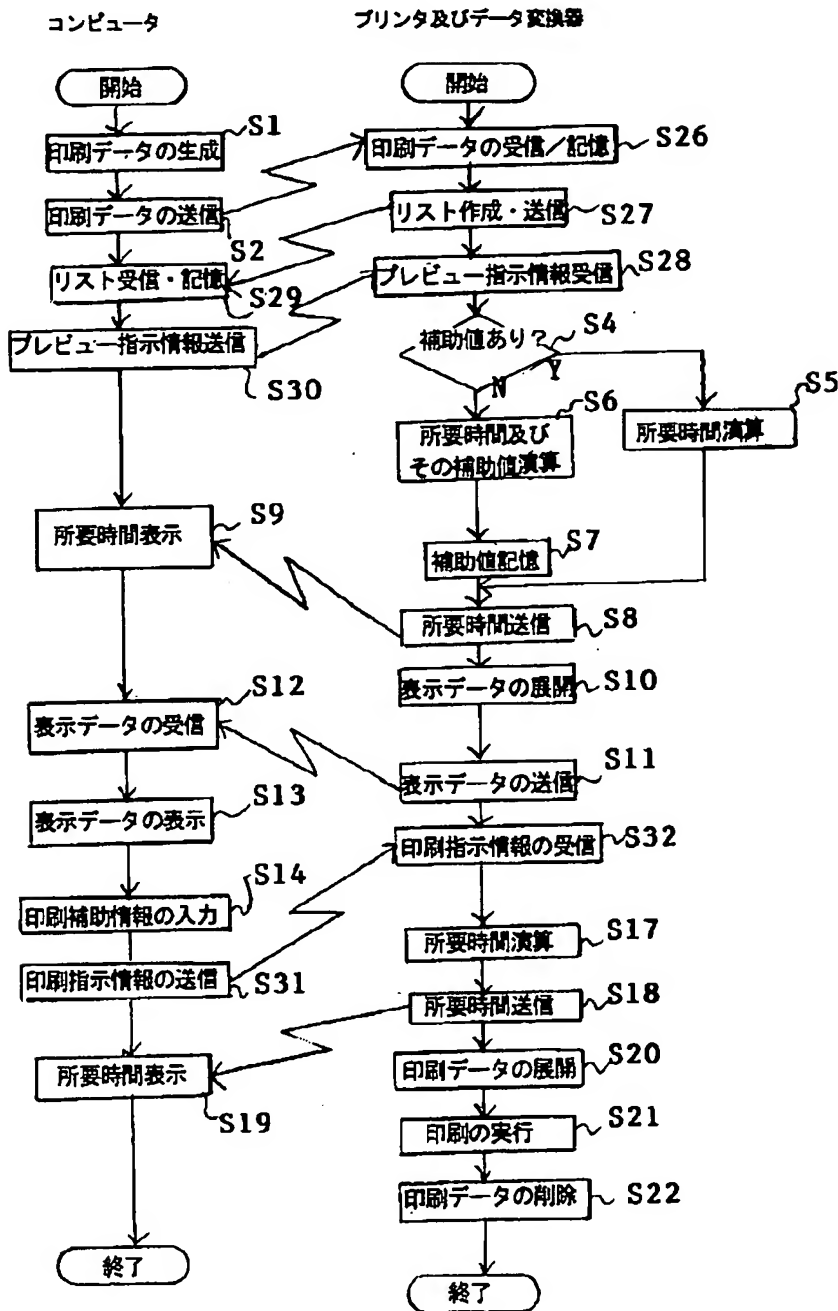
## 第1実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



[Drawing 5]

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## 第2実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



[Translation done.]

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